

FIG. 1A

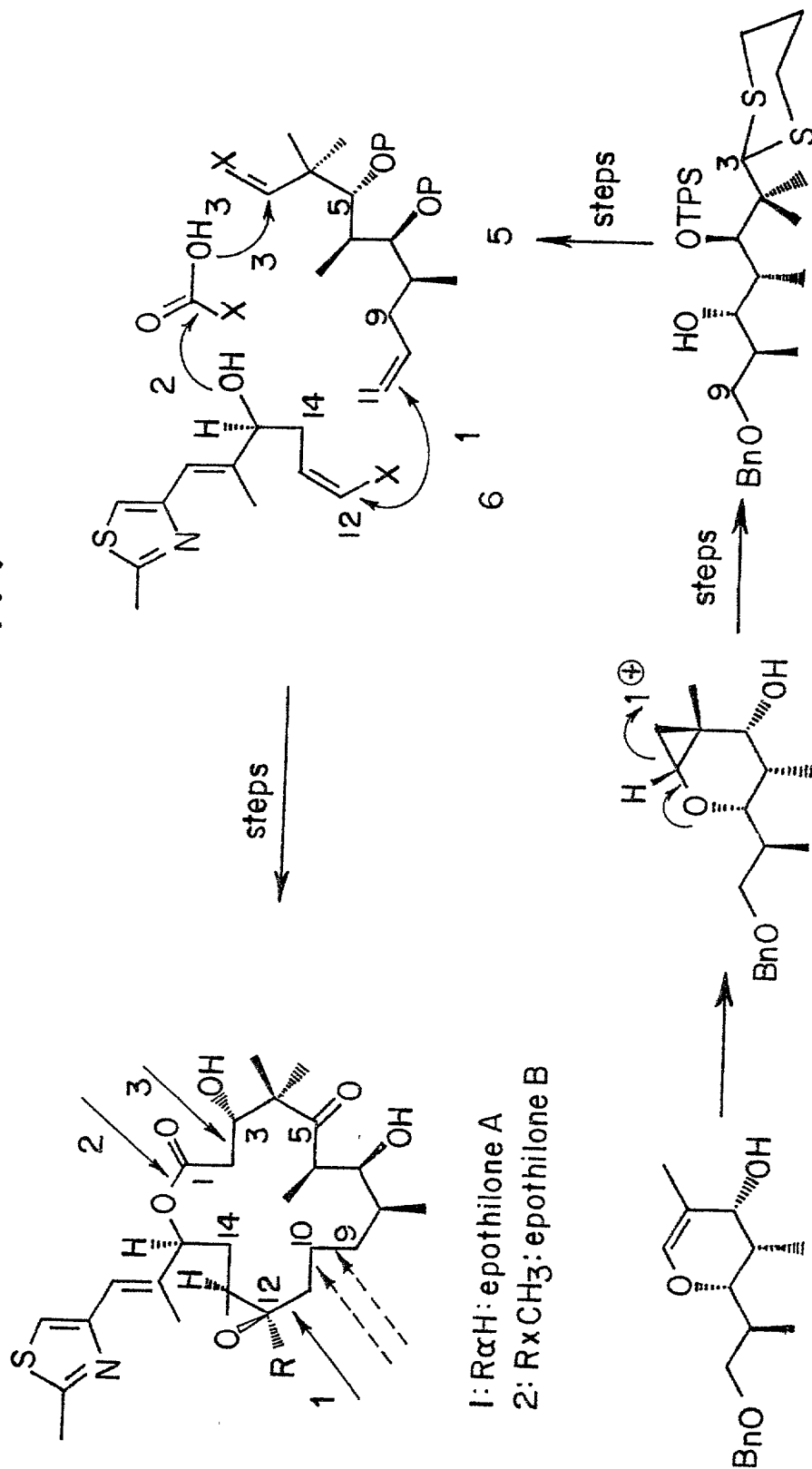


FIG. 1B

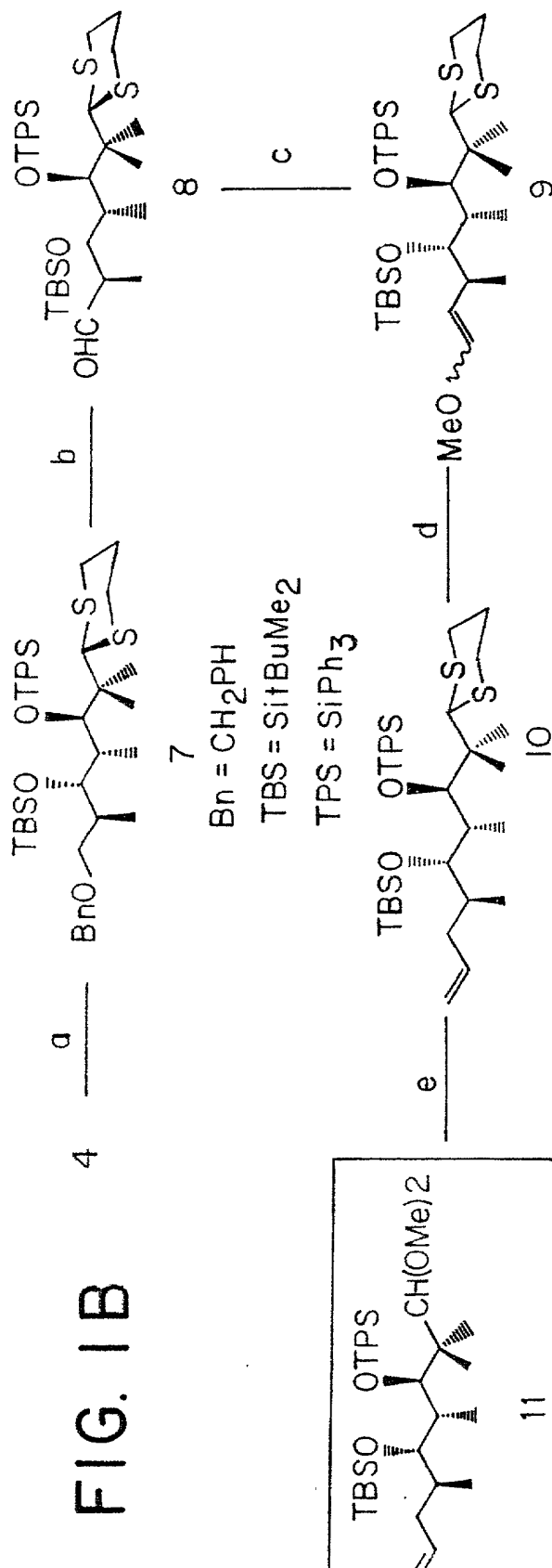


FIG. 12B

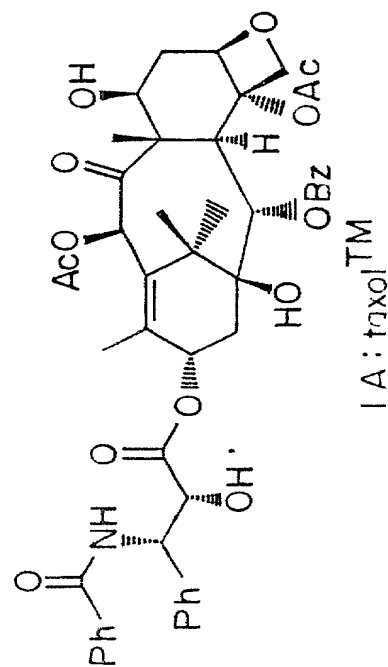
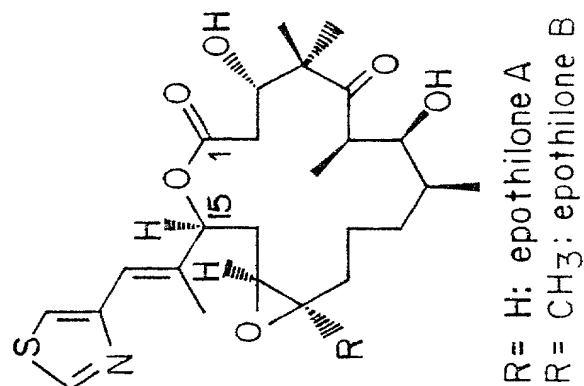
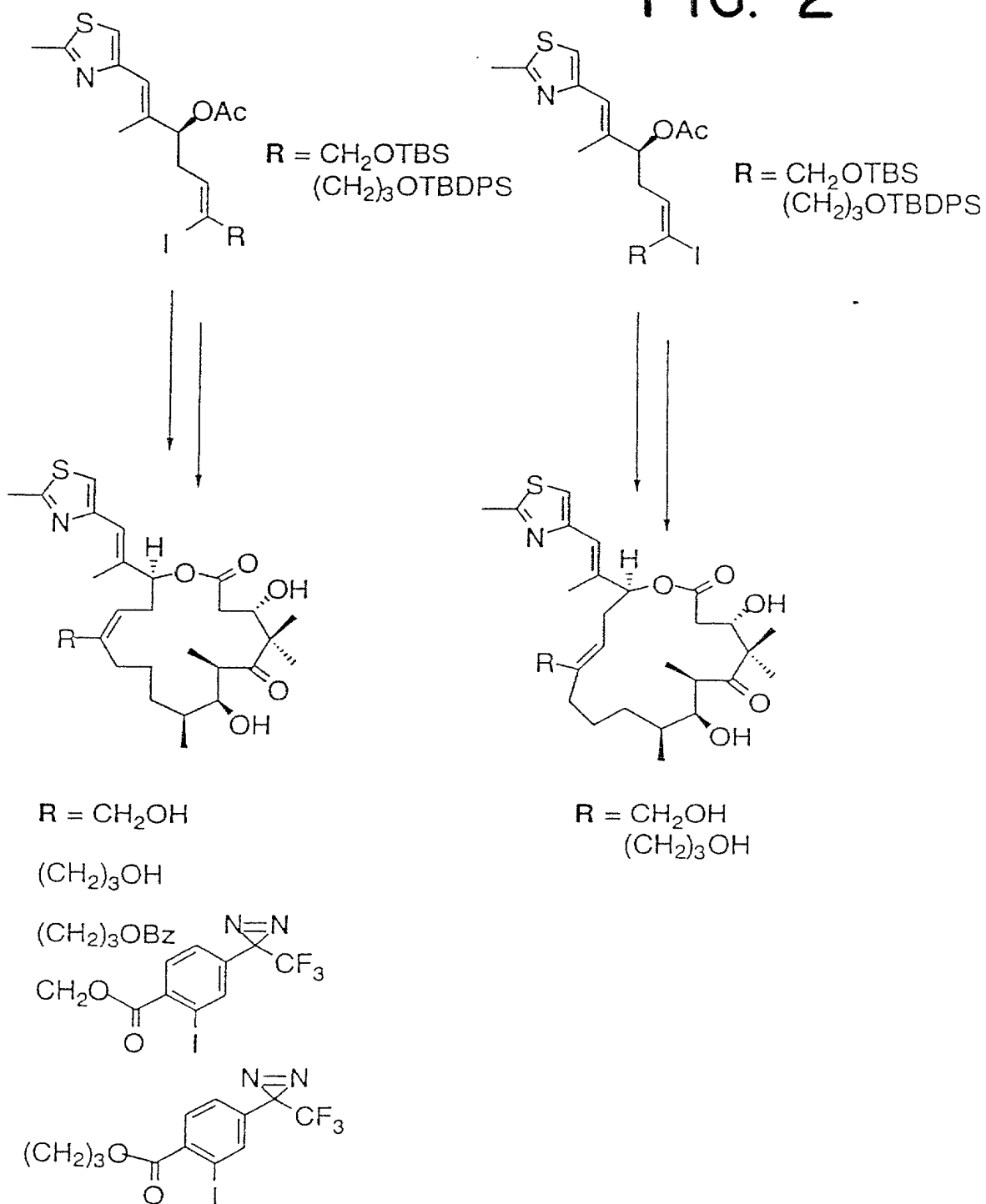


FIG. 12A



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FIG. 2



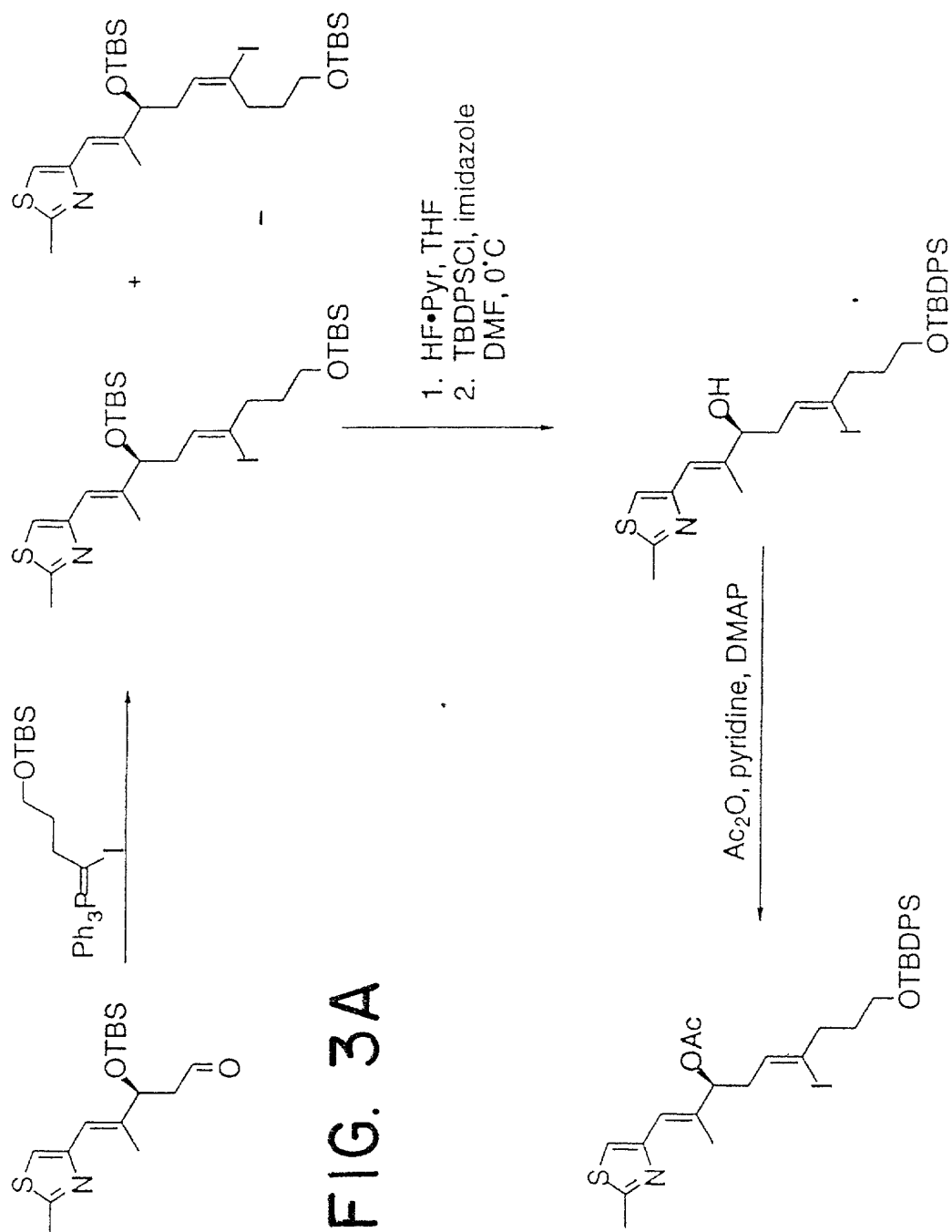


FIG. 3B

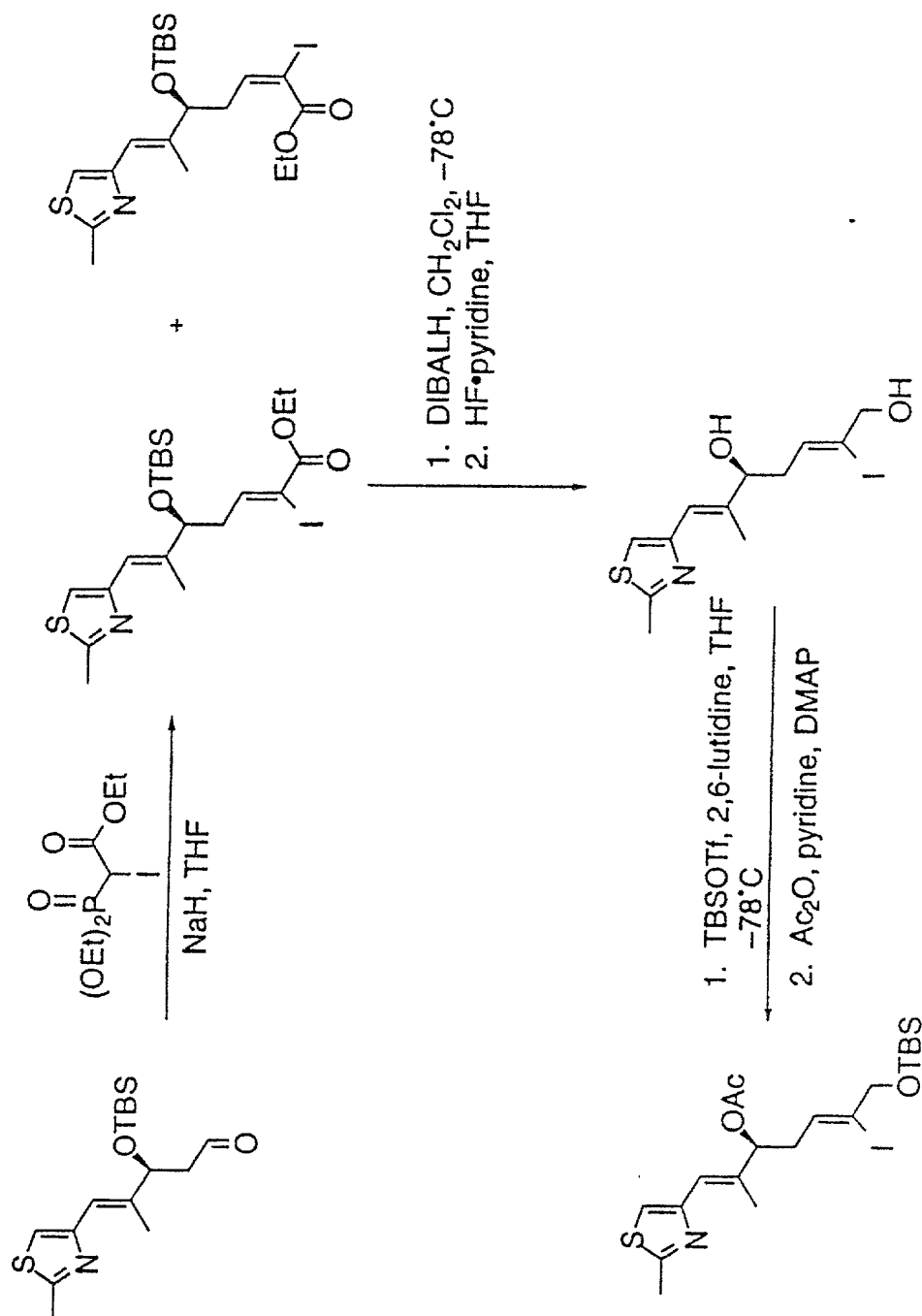
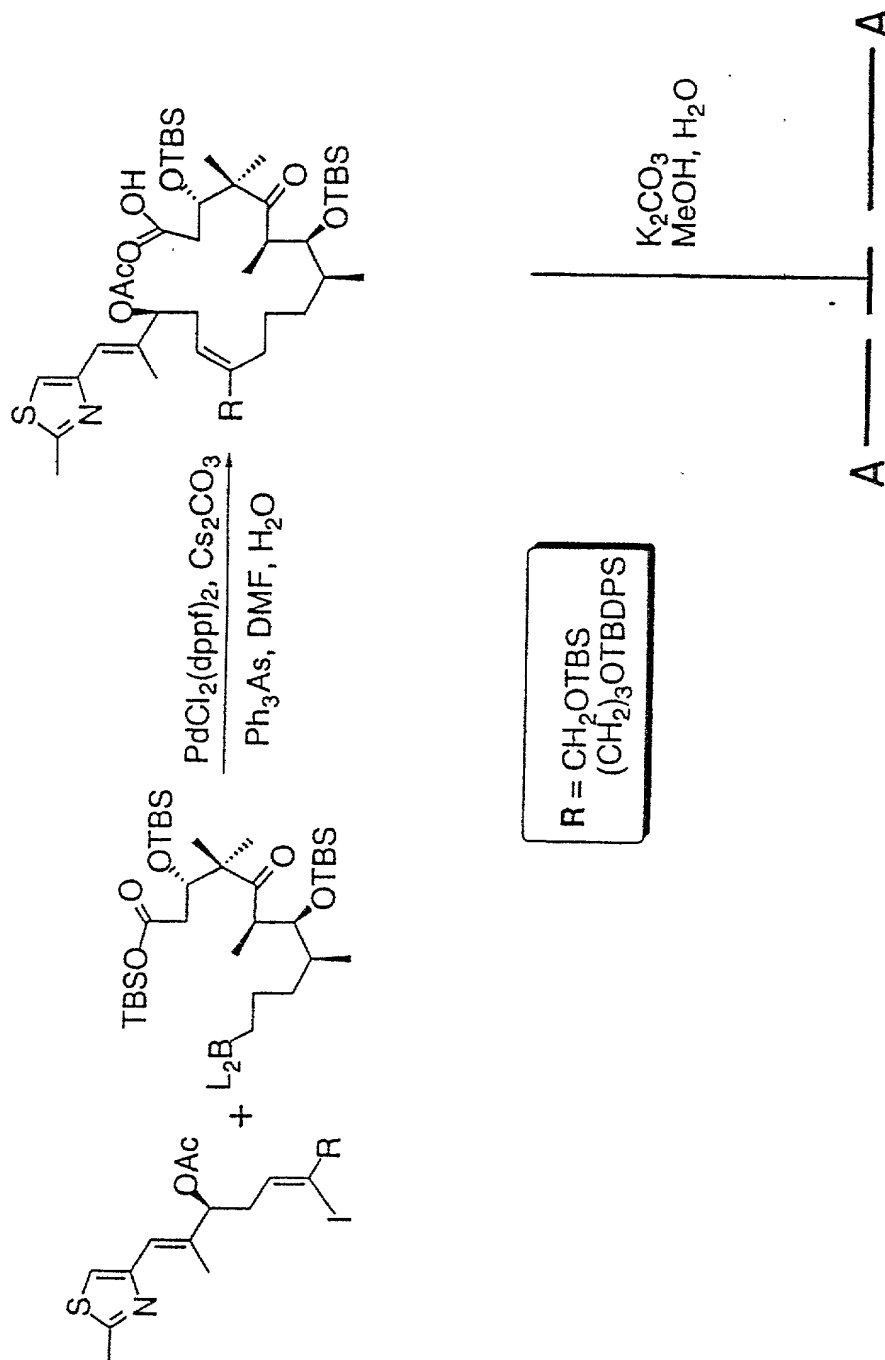


FIG. 3C



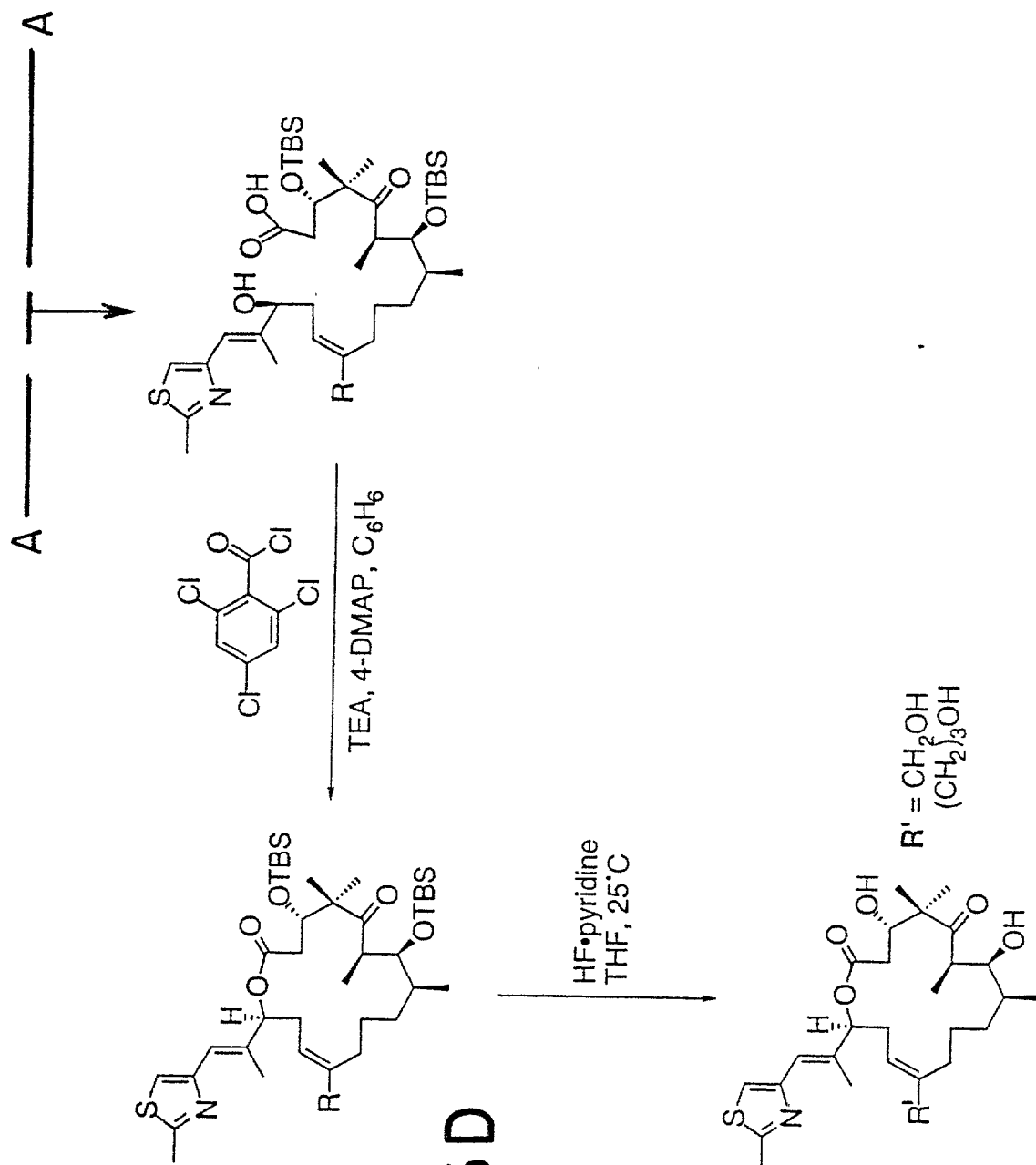
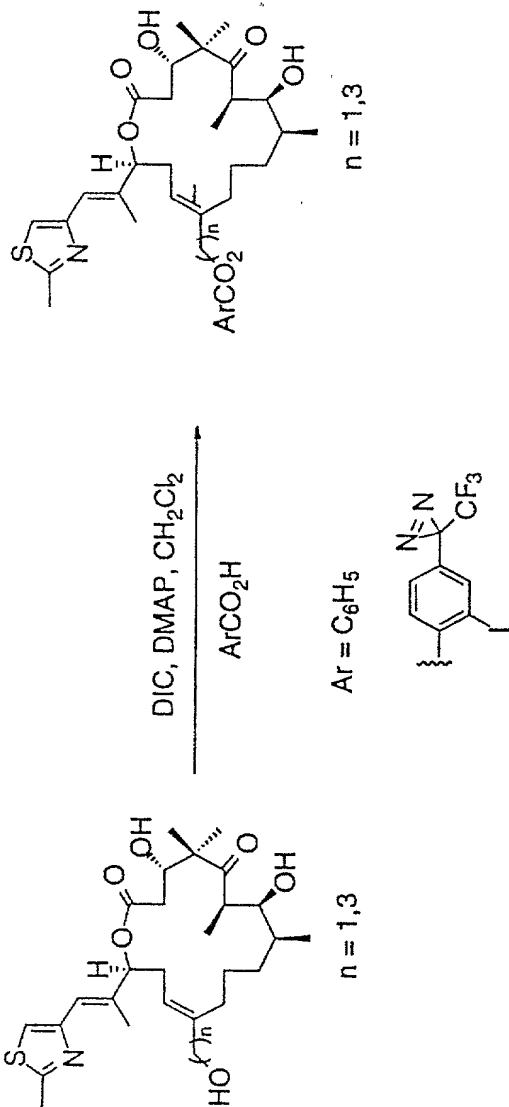


FIG. 3D

FIG. 3



FM 3-16.1

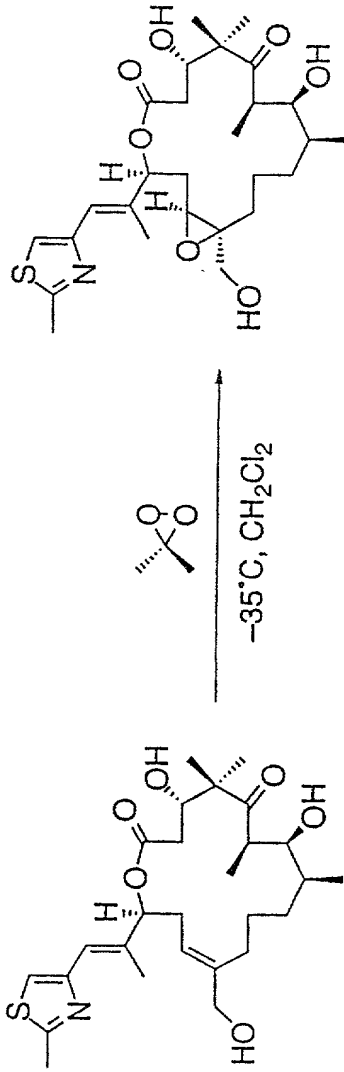


FIG. 4A

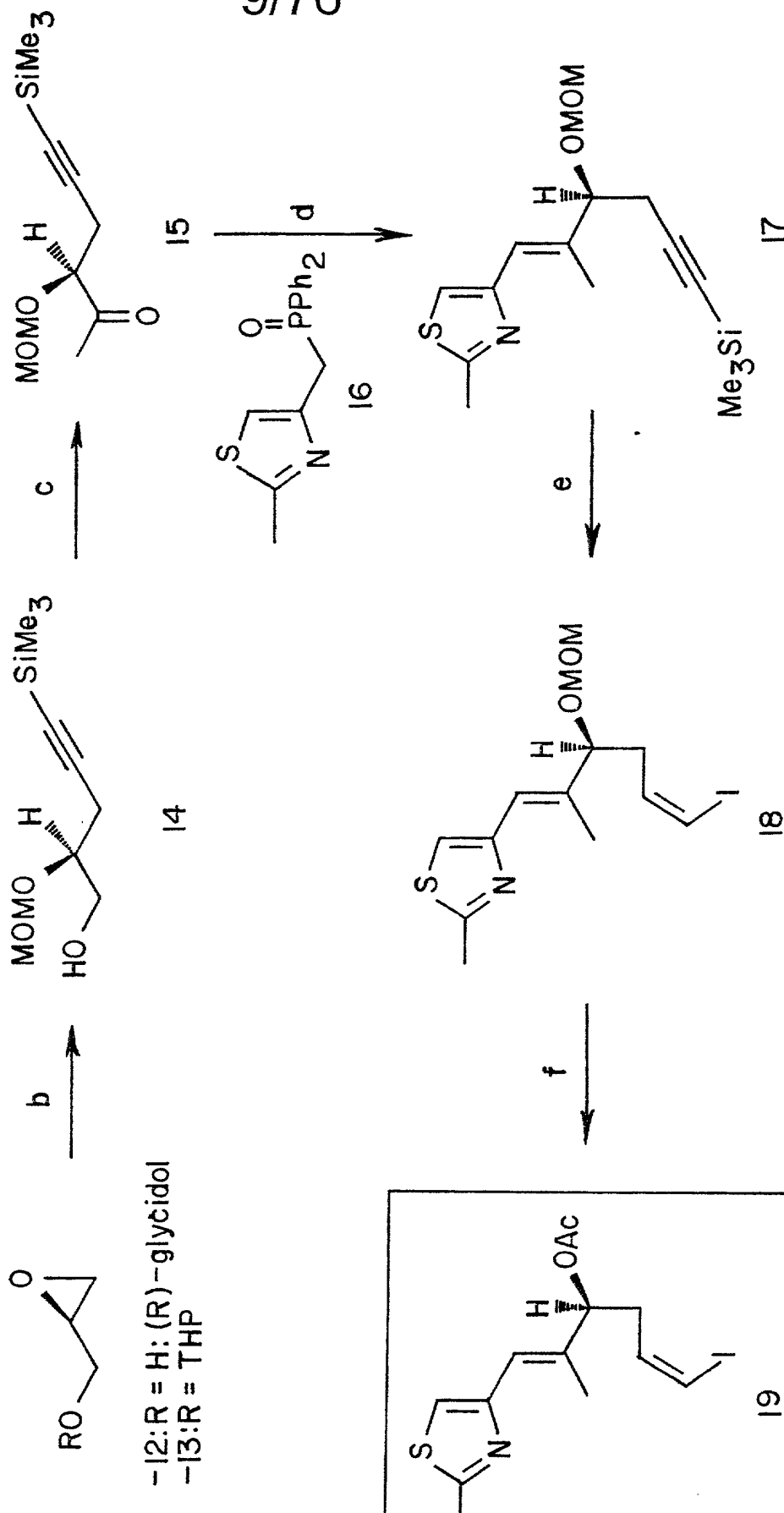


FIG. 4B

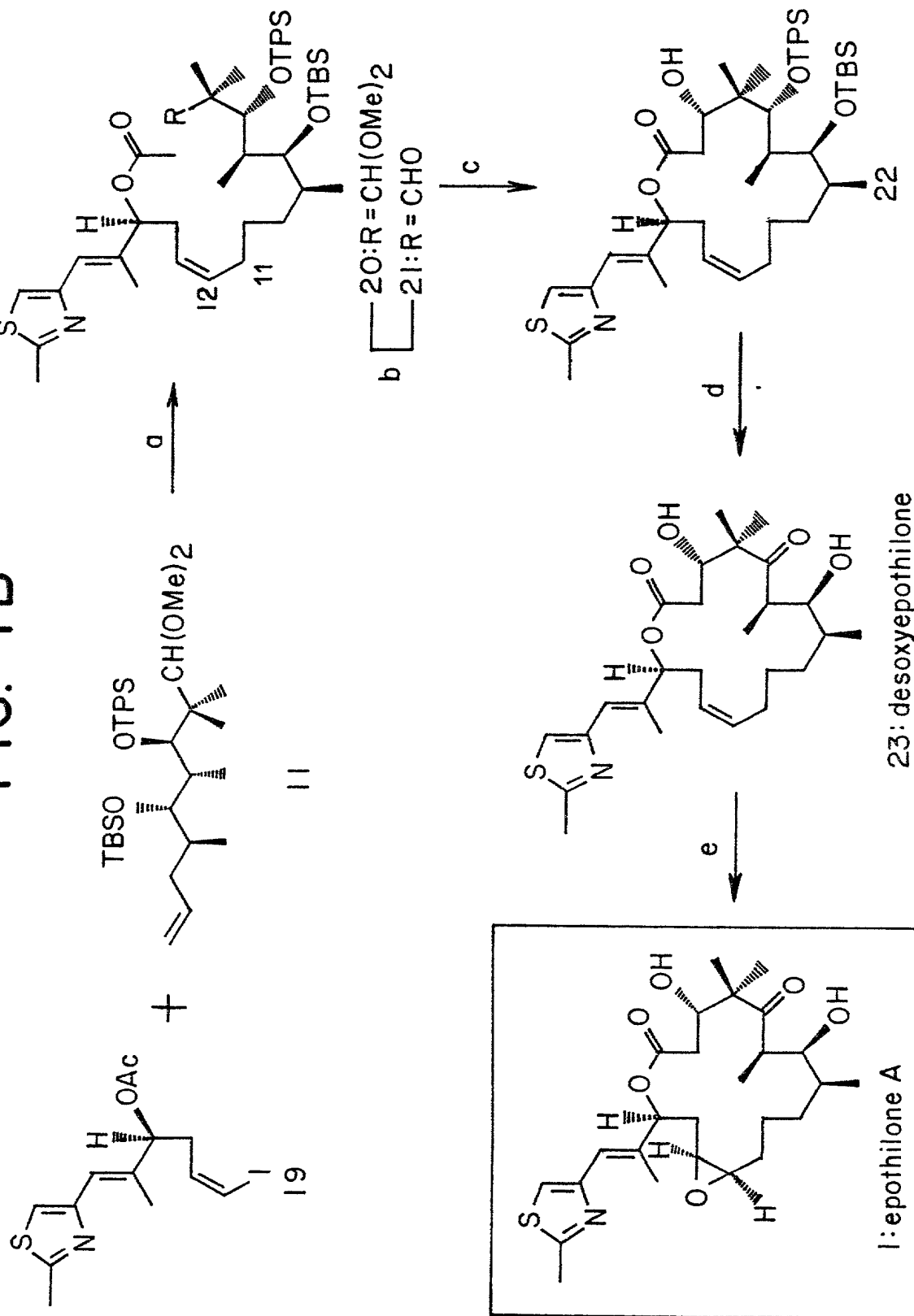
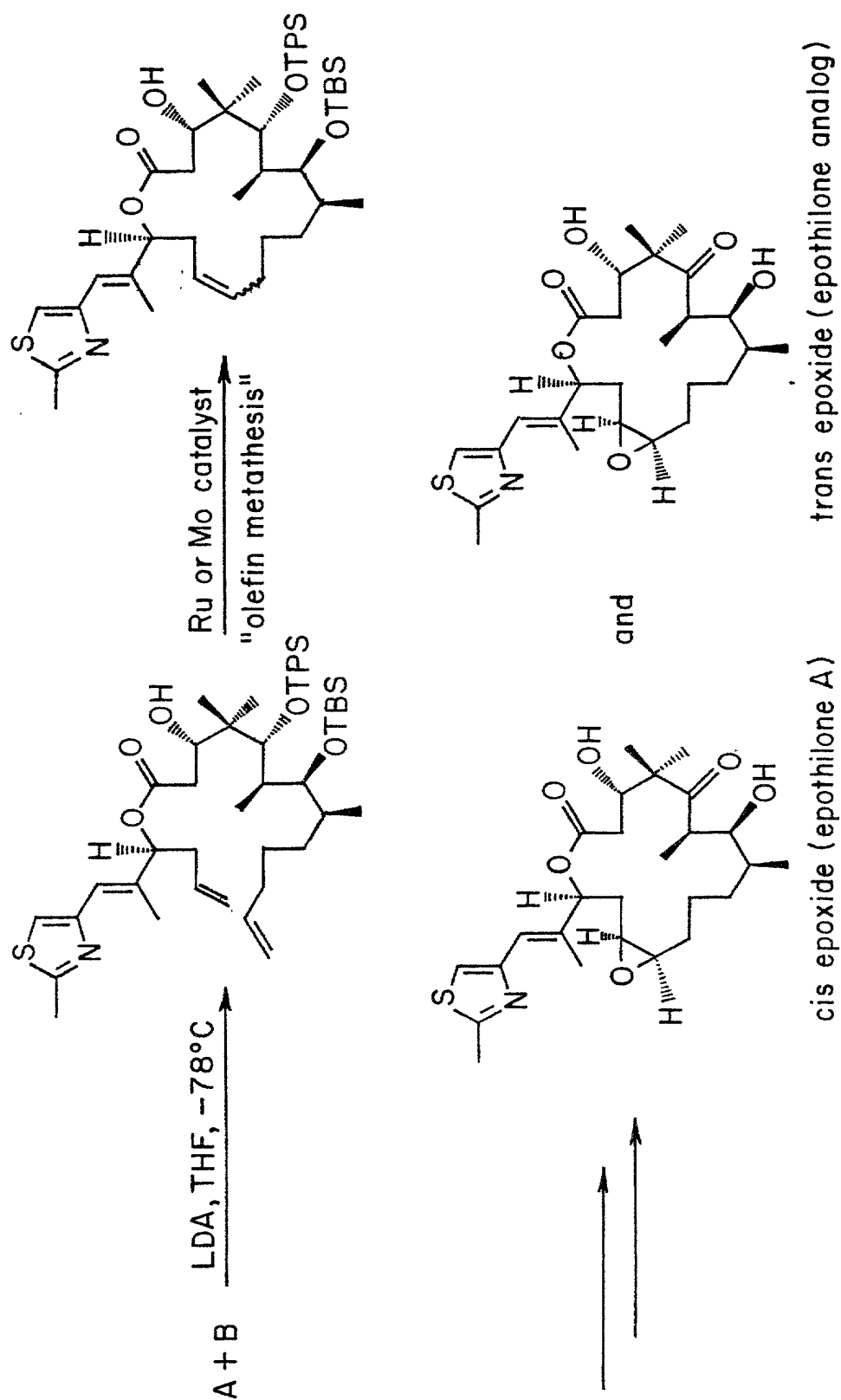
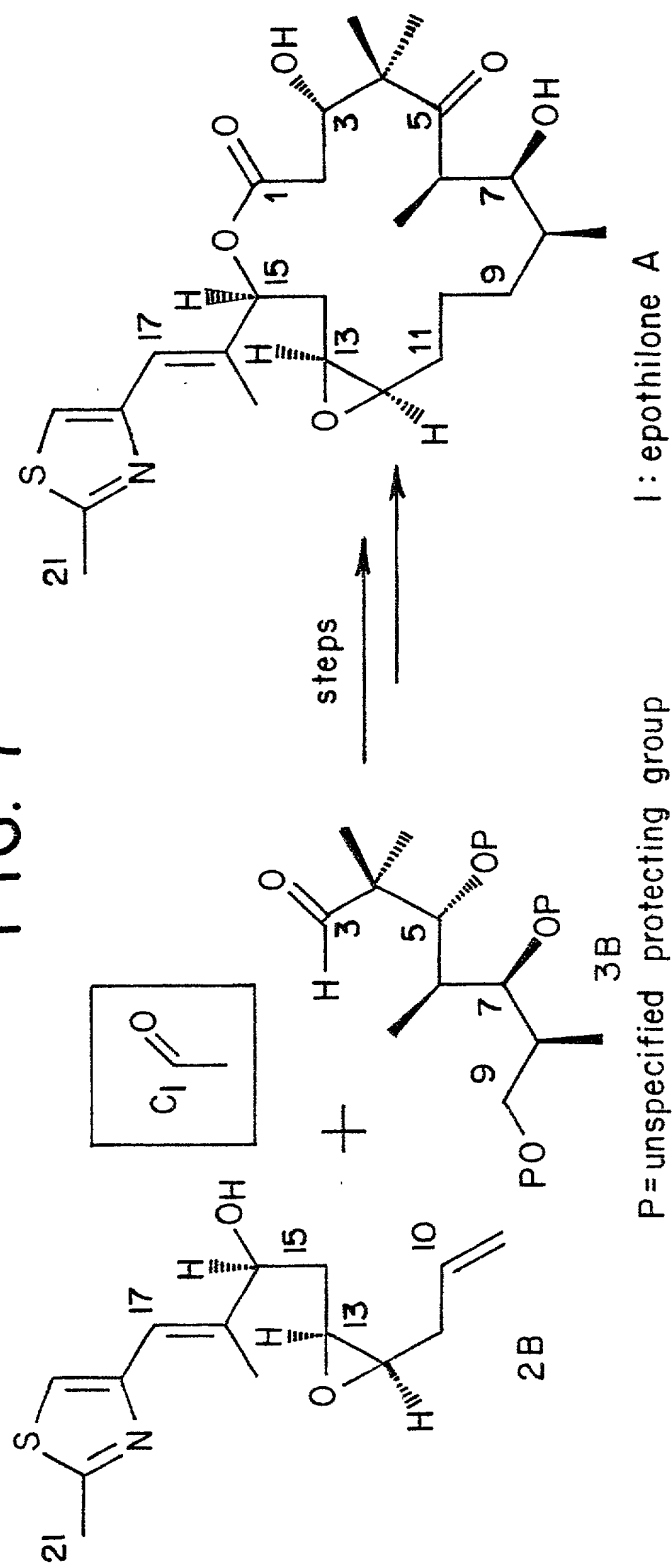


FIG. 6B

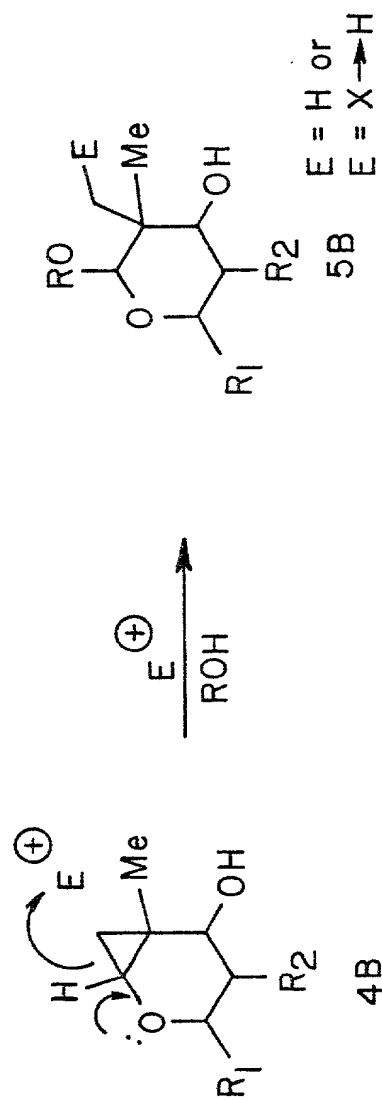


*17 steps from known starting materials vs. 27 steps for aldol macrocyclization

FIG. 7



Convergent strategy for a total synthesis of epothilone A (1).



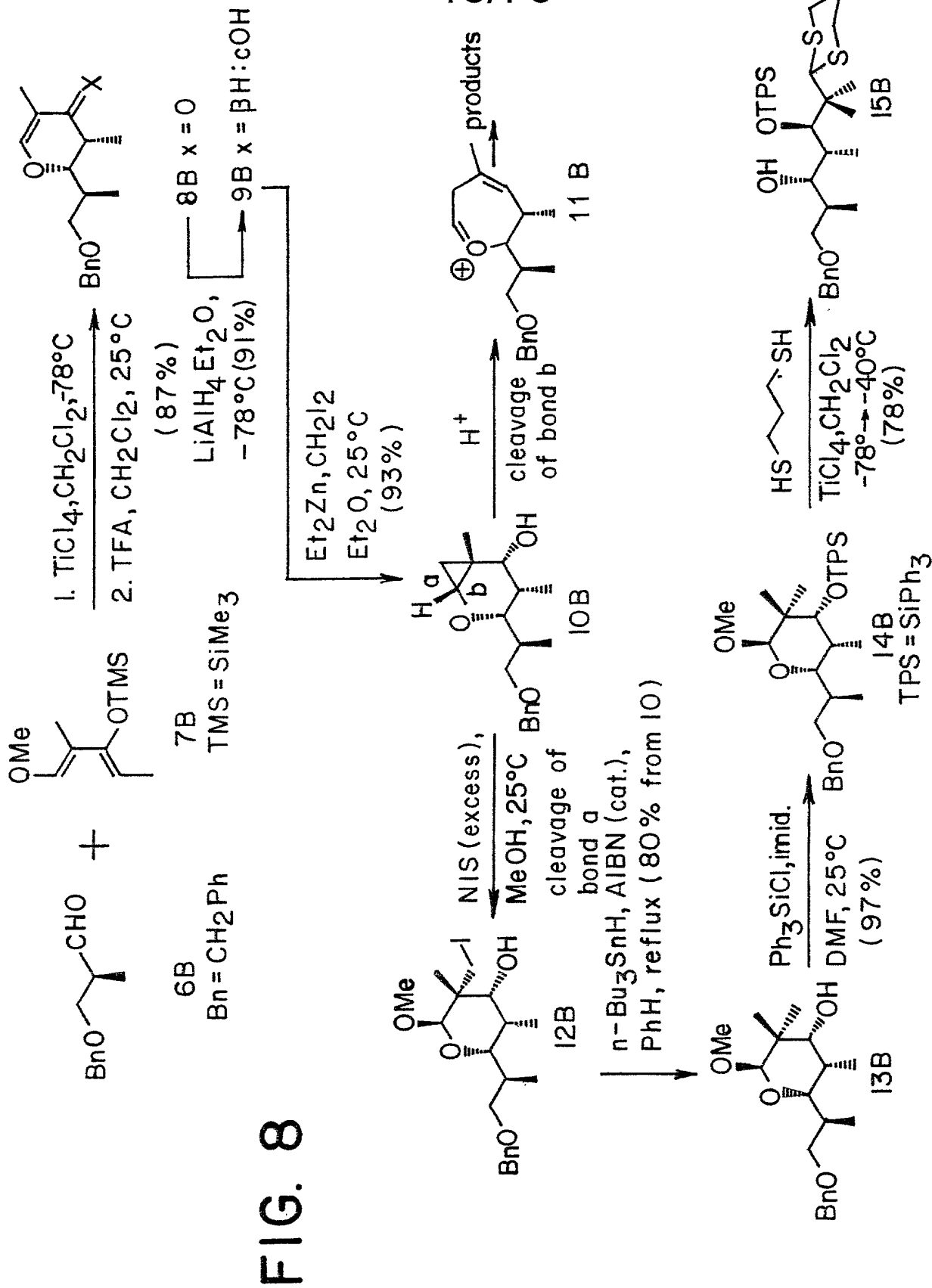
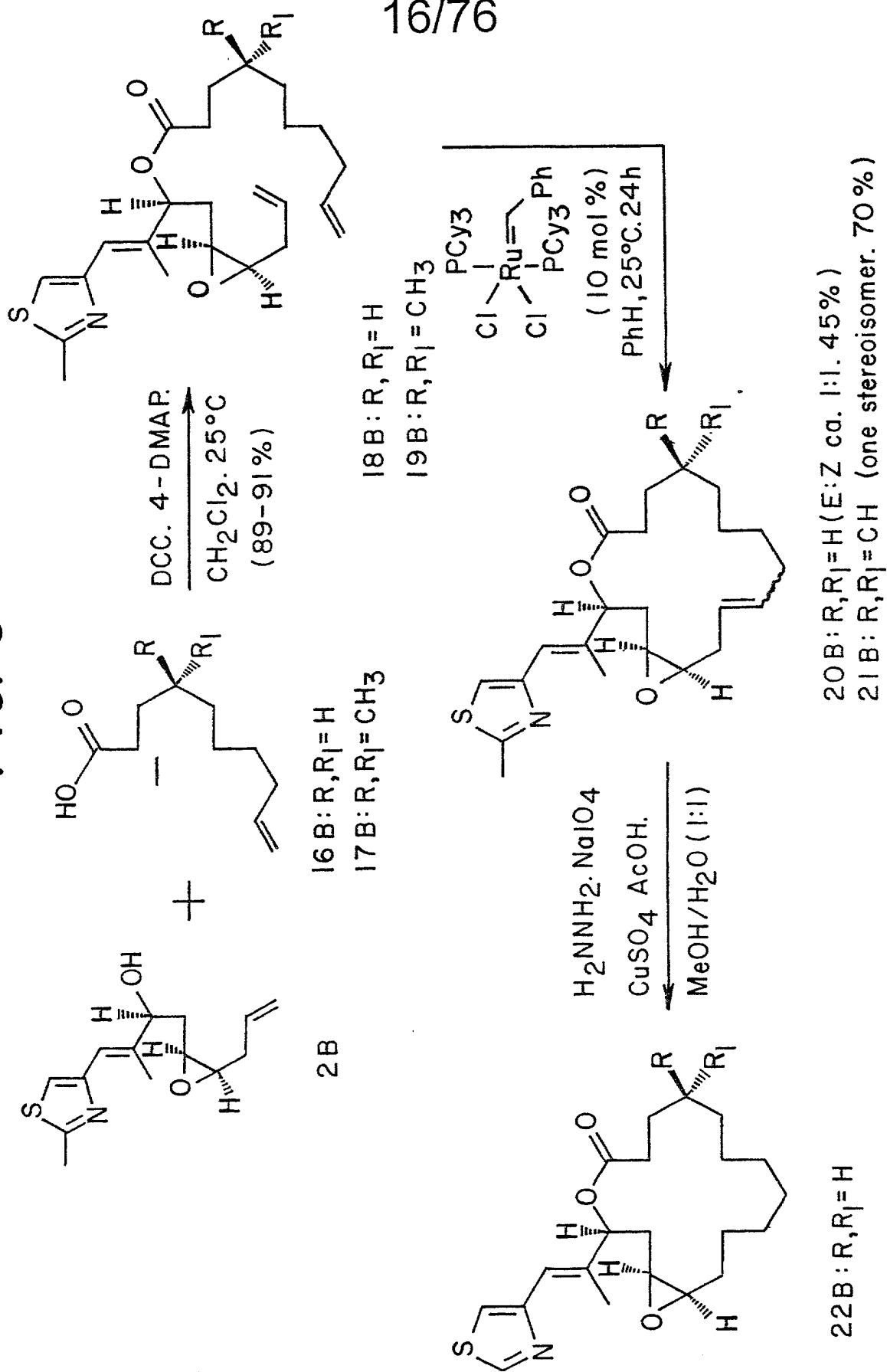
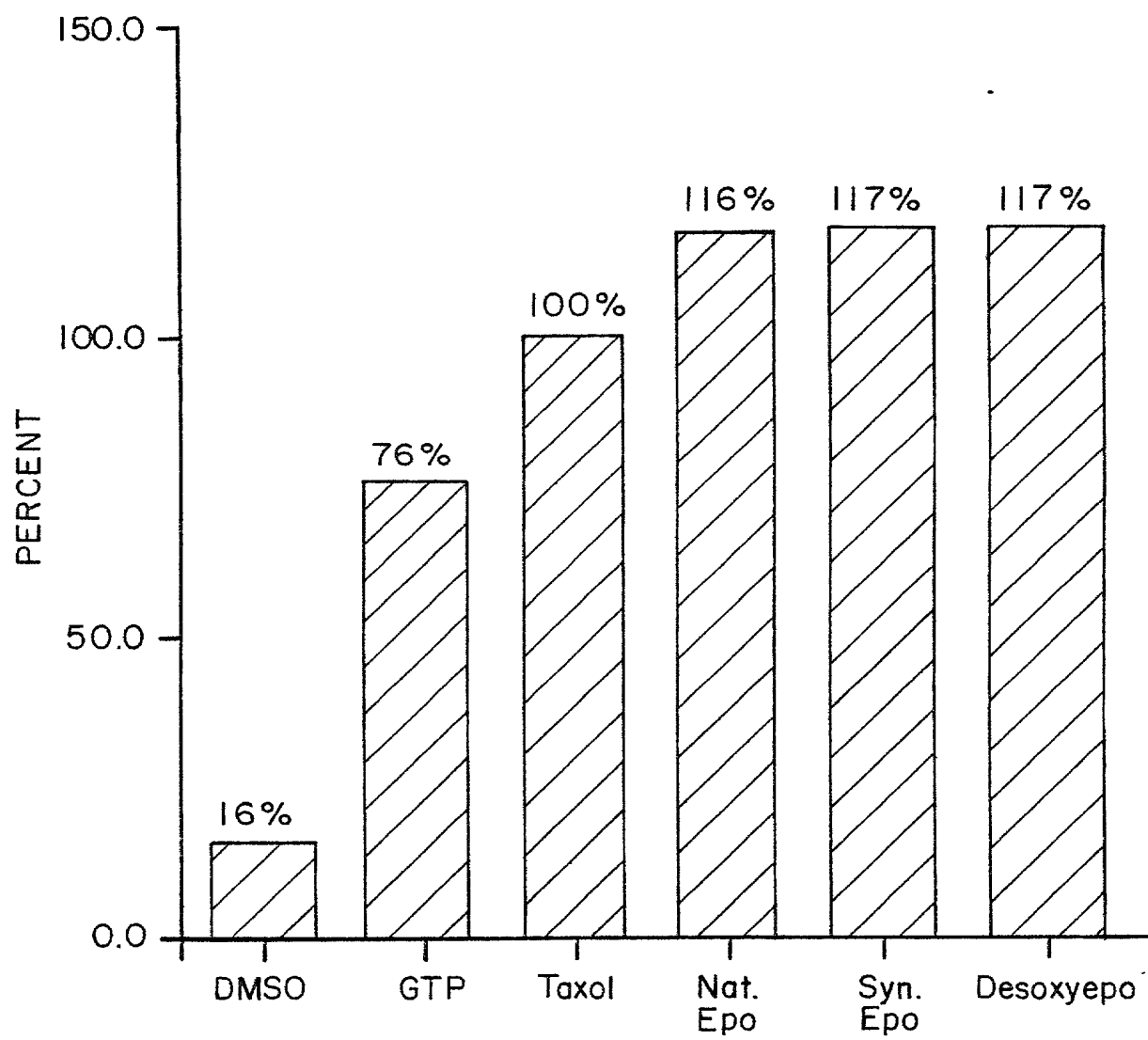


FIG. 9



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FIG. 10



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FIG. 11

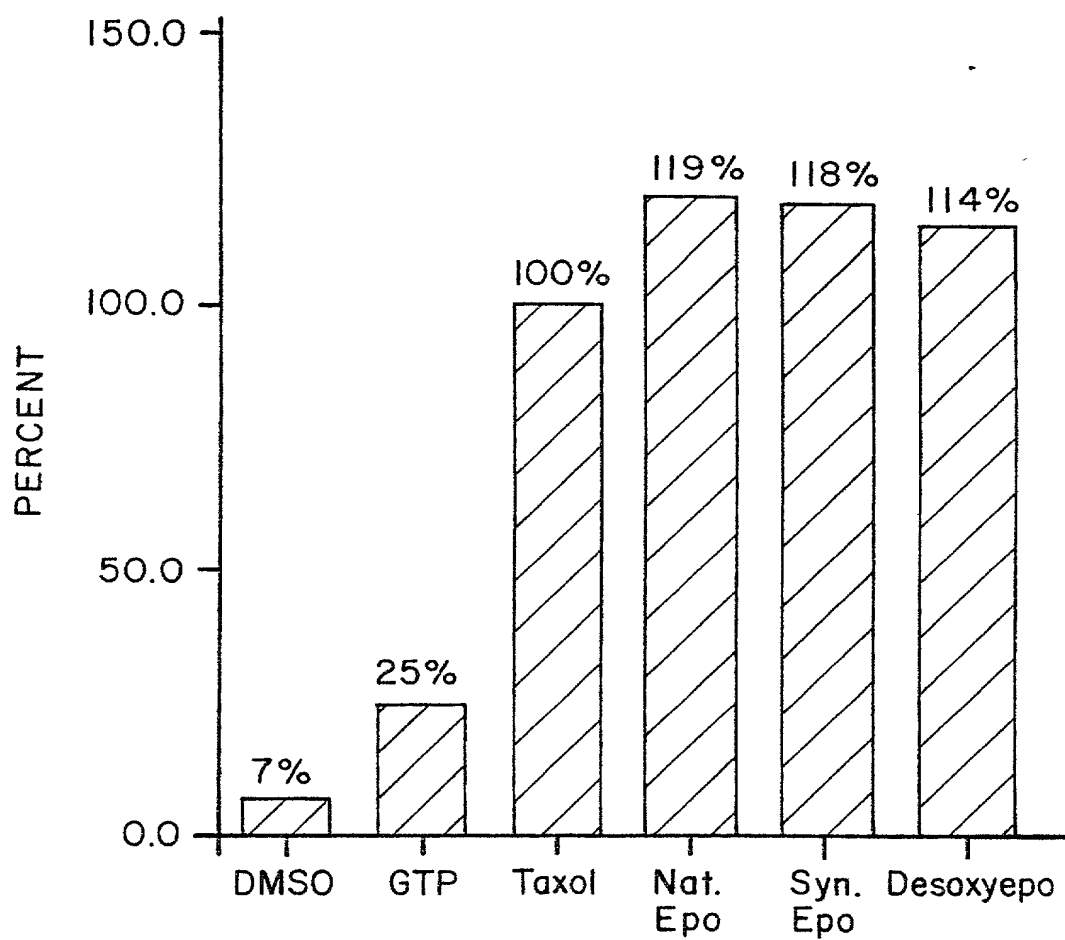


FIG. 13

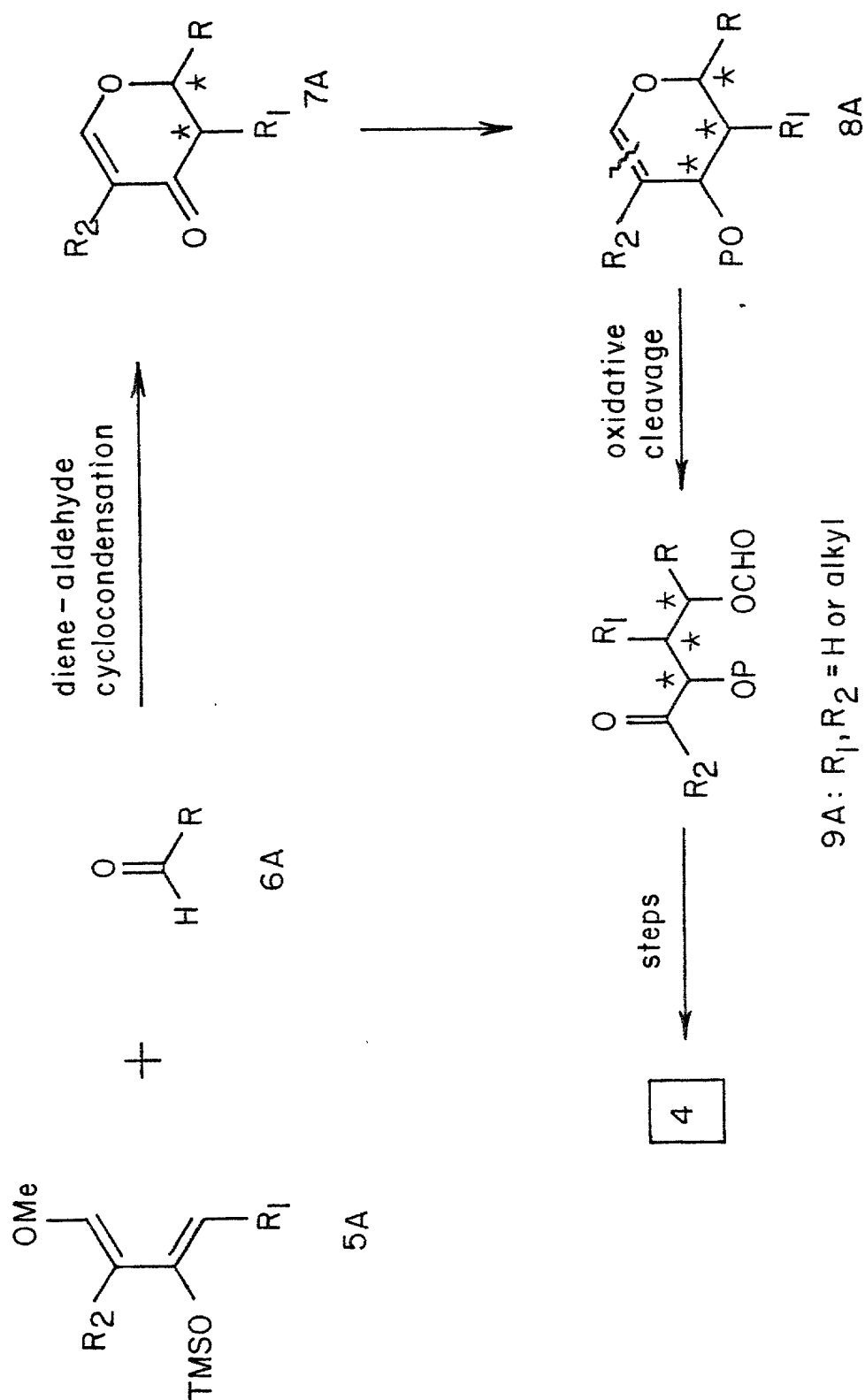


FIG. 14A

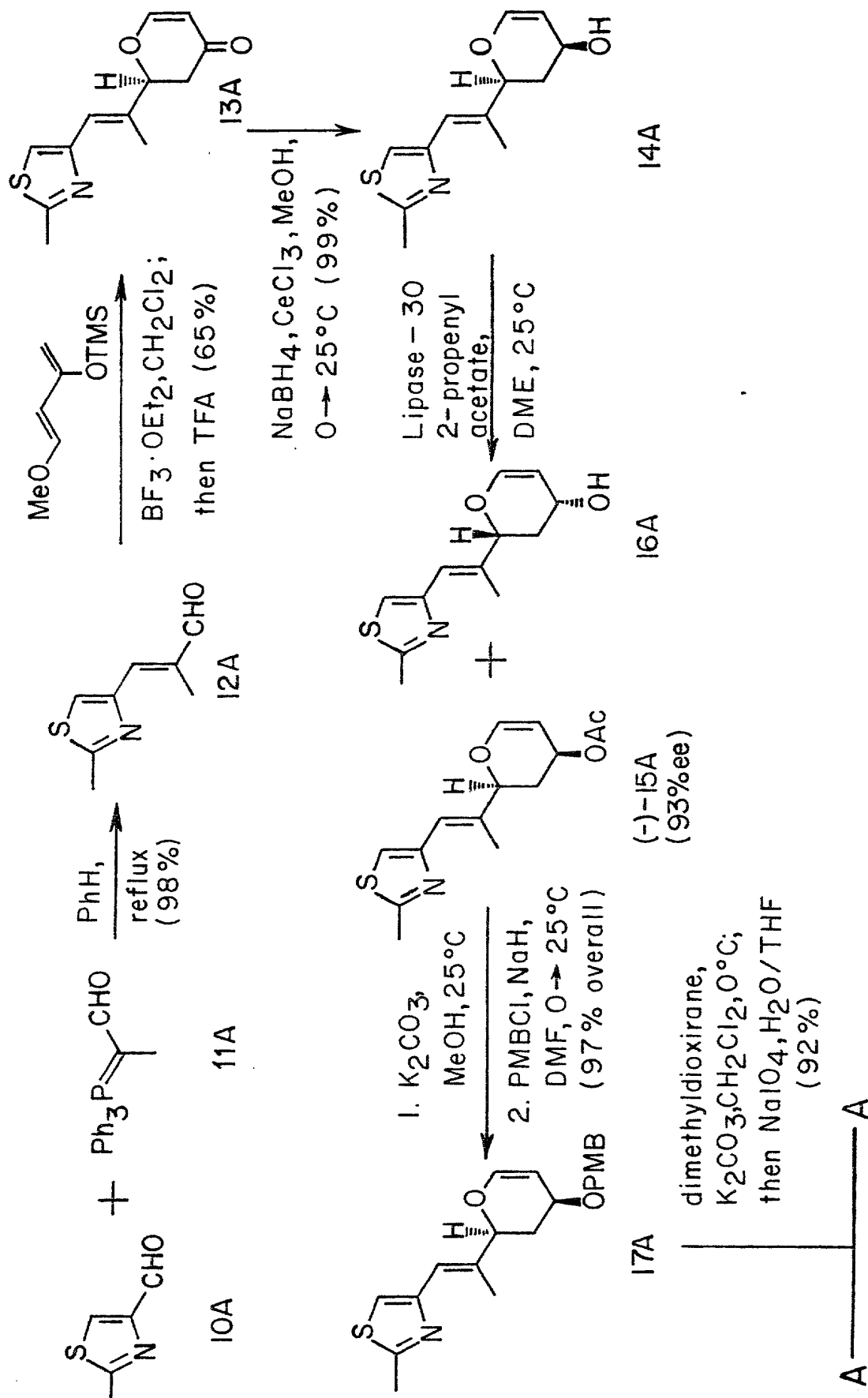


FIG. 14B

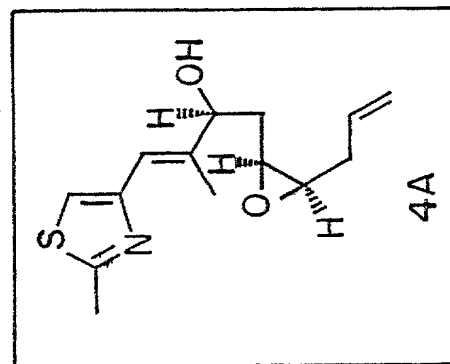
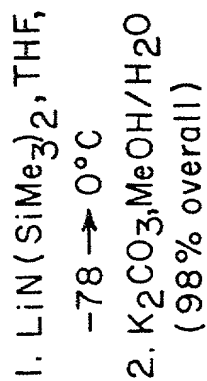
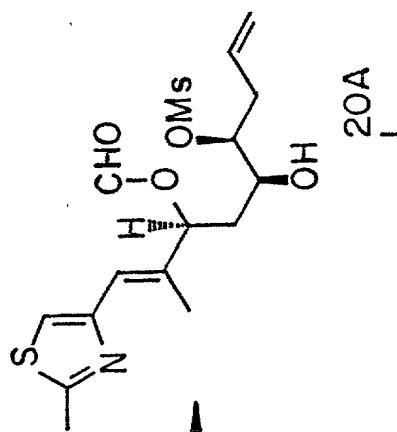
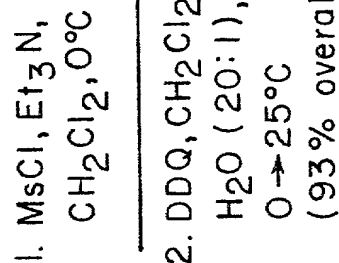
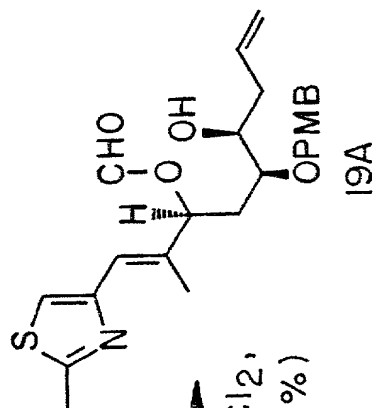
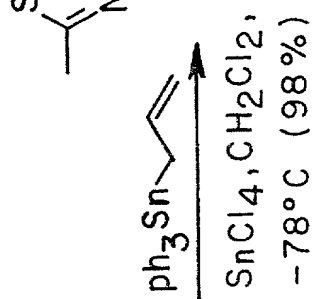
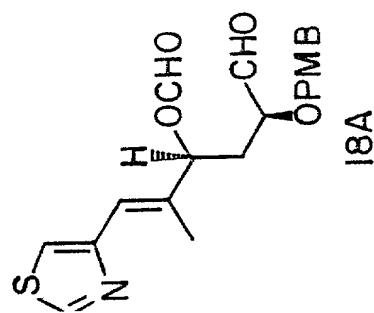


FIG. 15

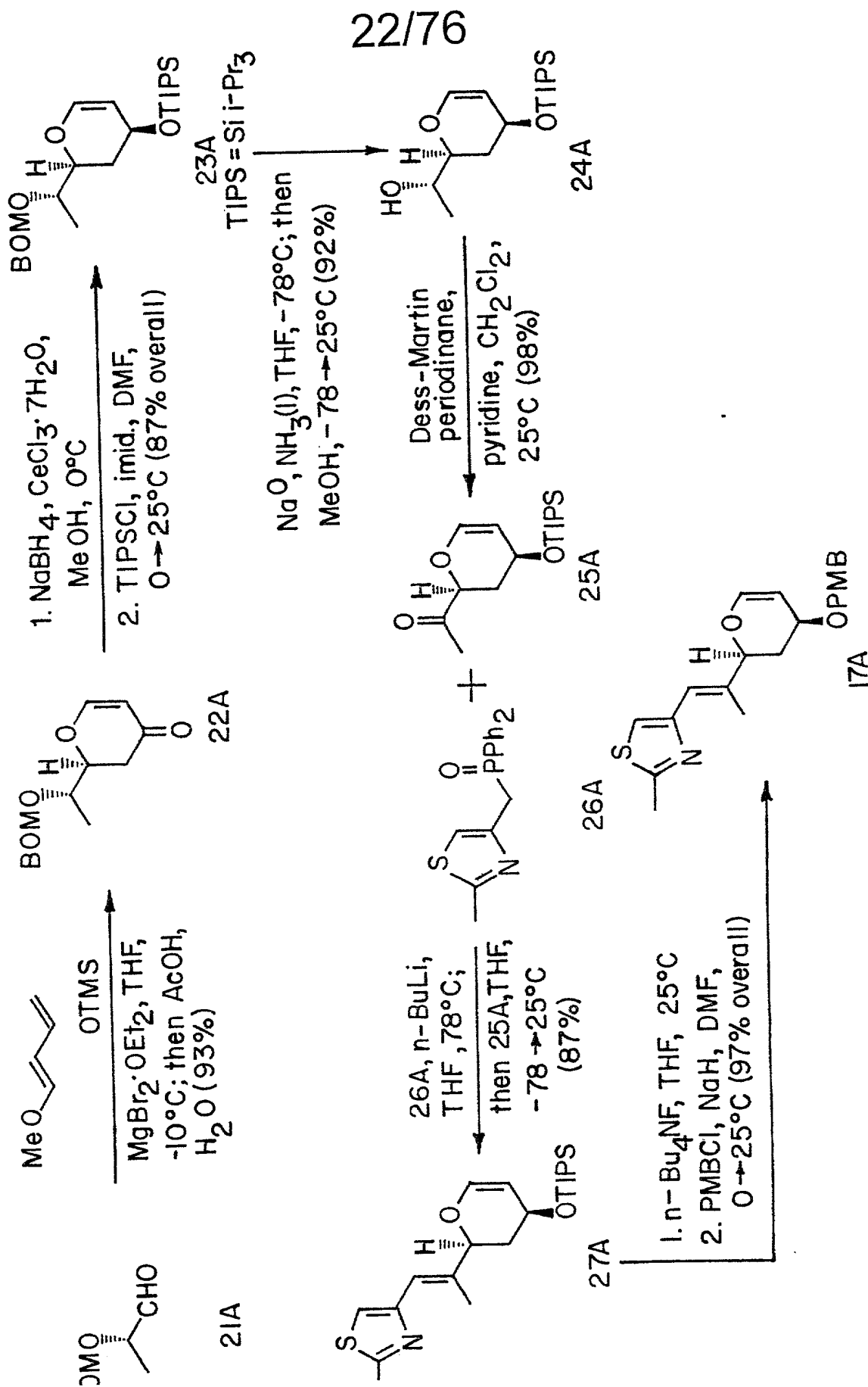


FIG. 16

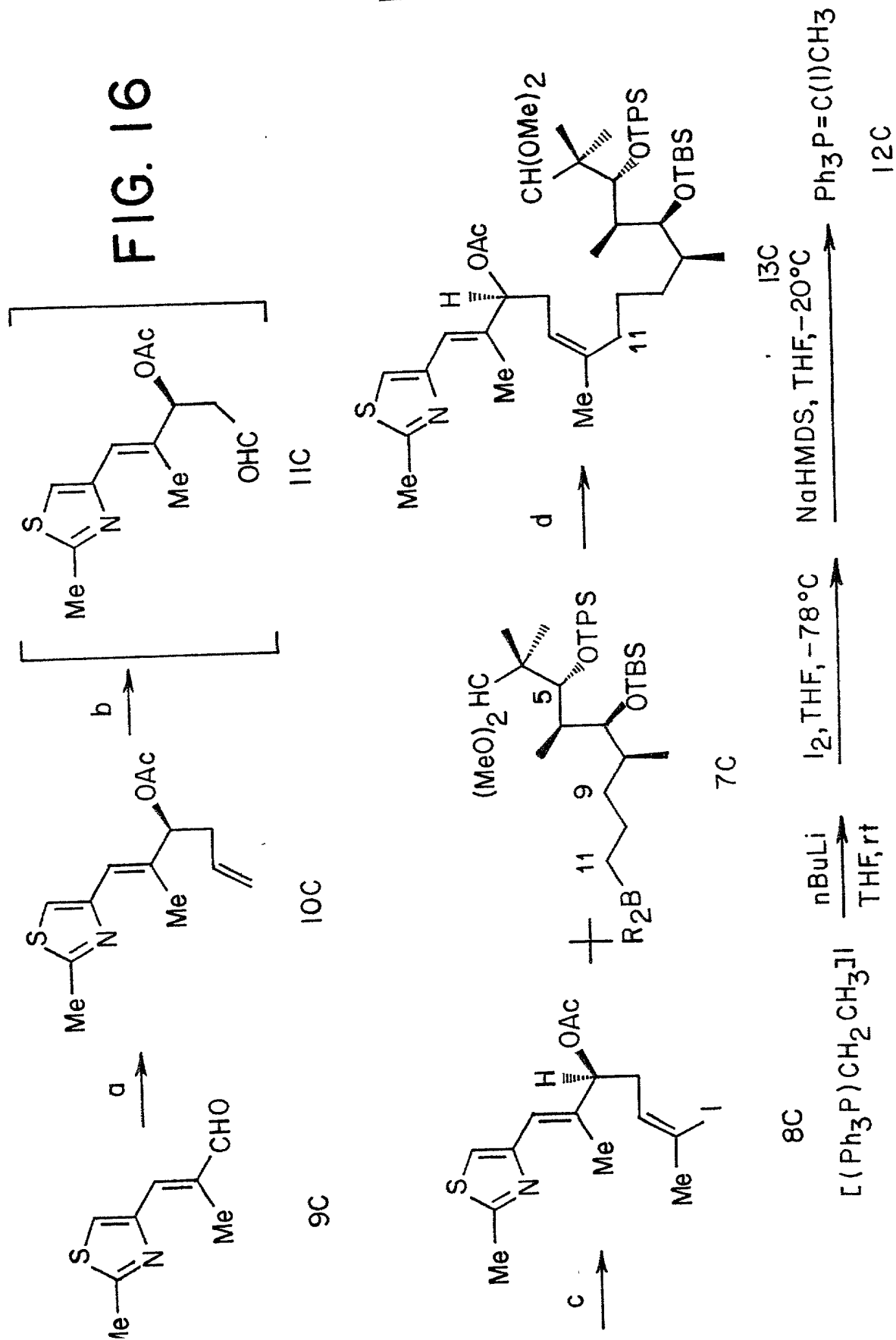
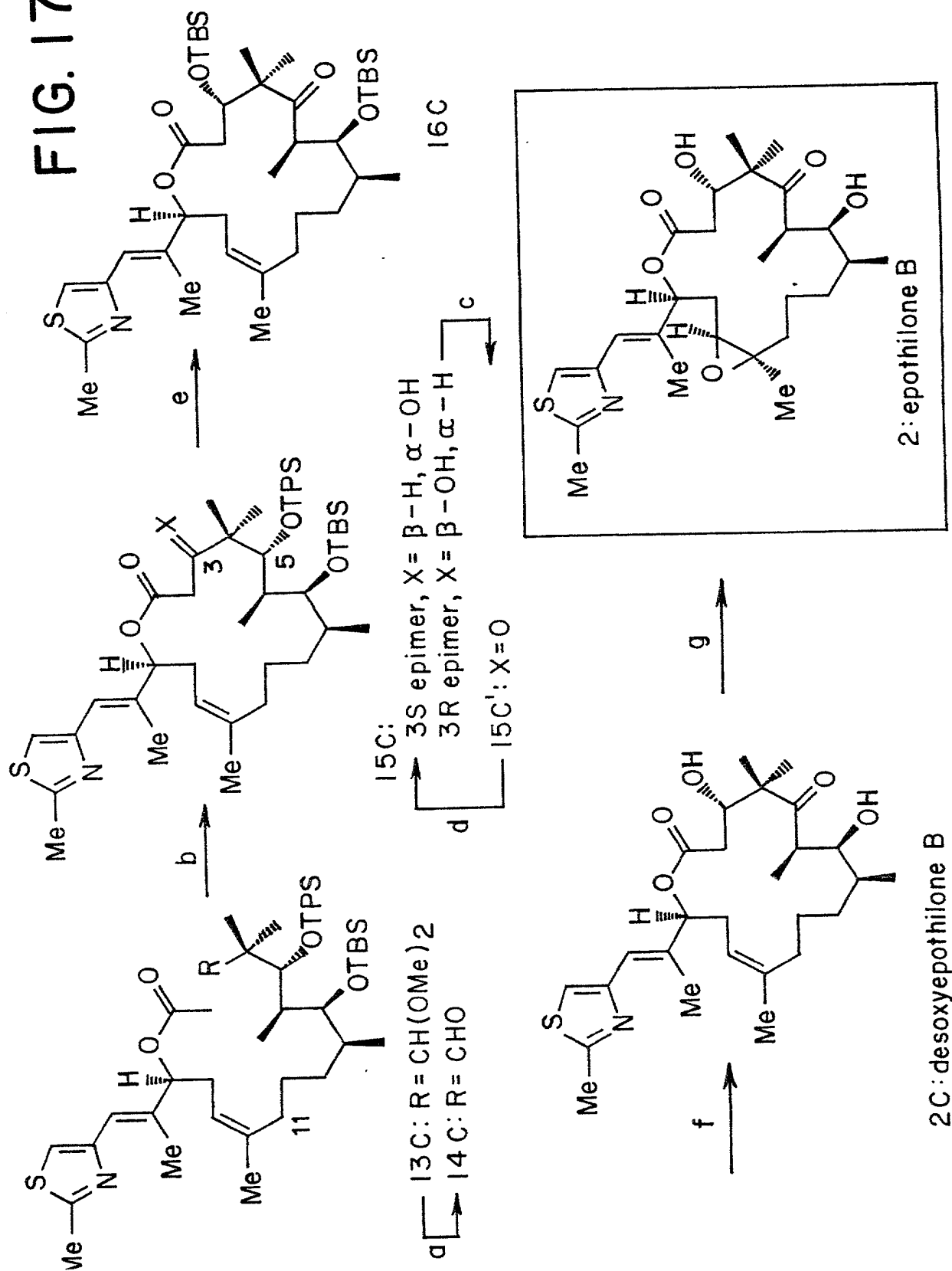


FIG. 17



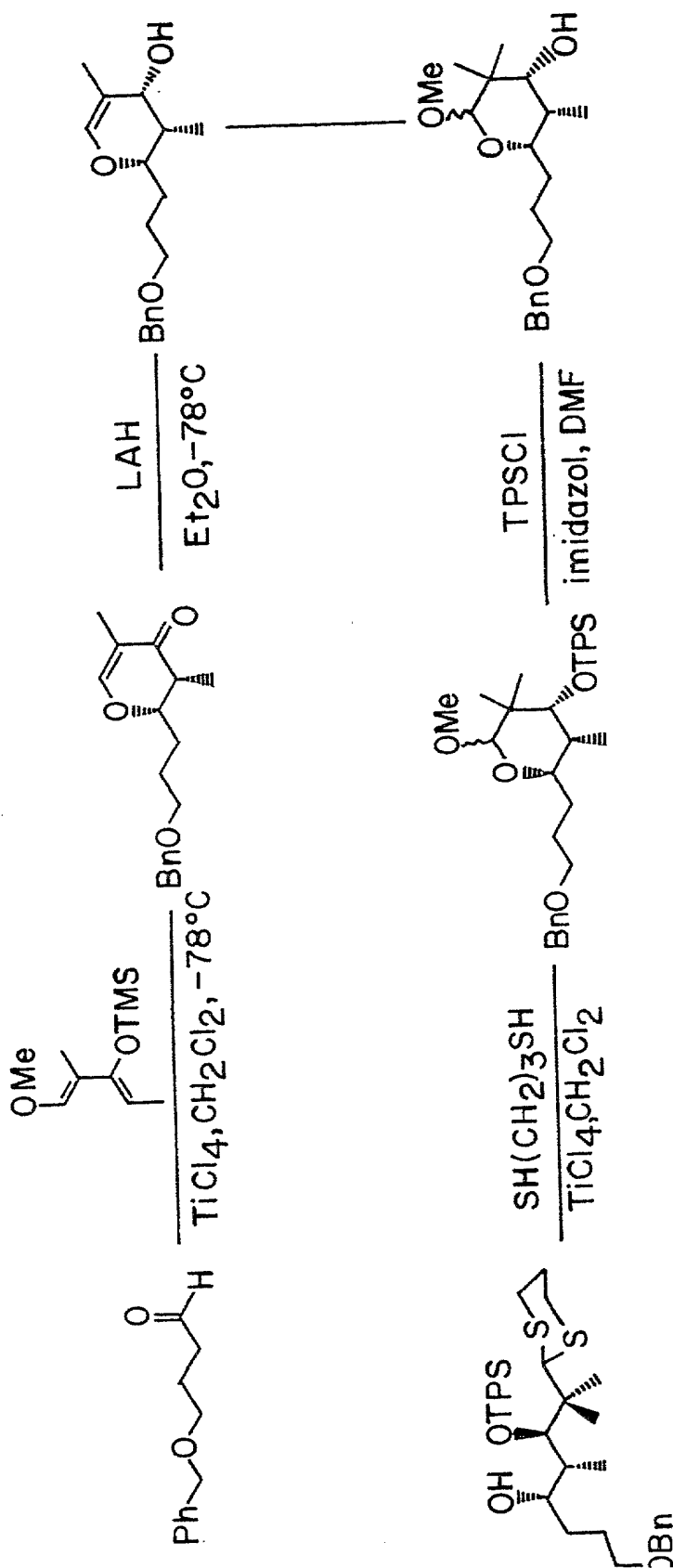


FIG. 18A

FIG. 19A

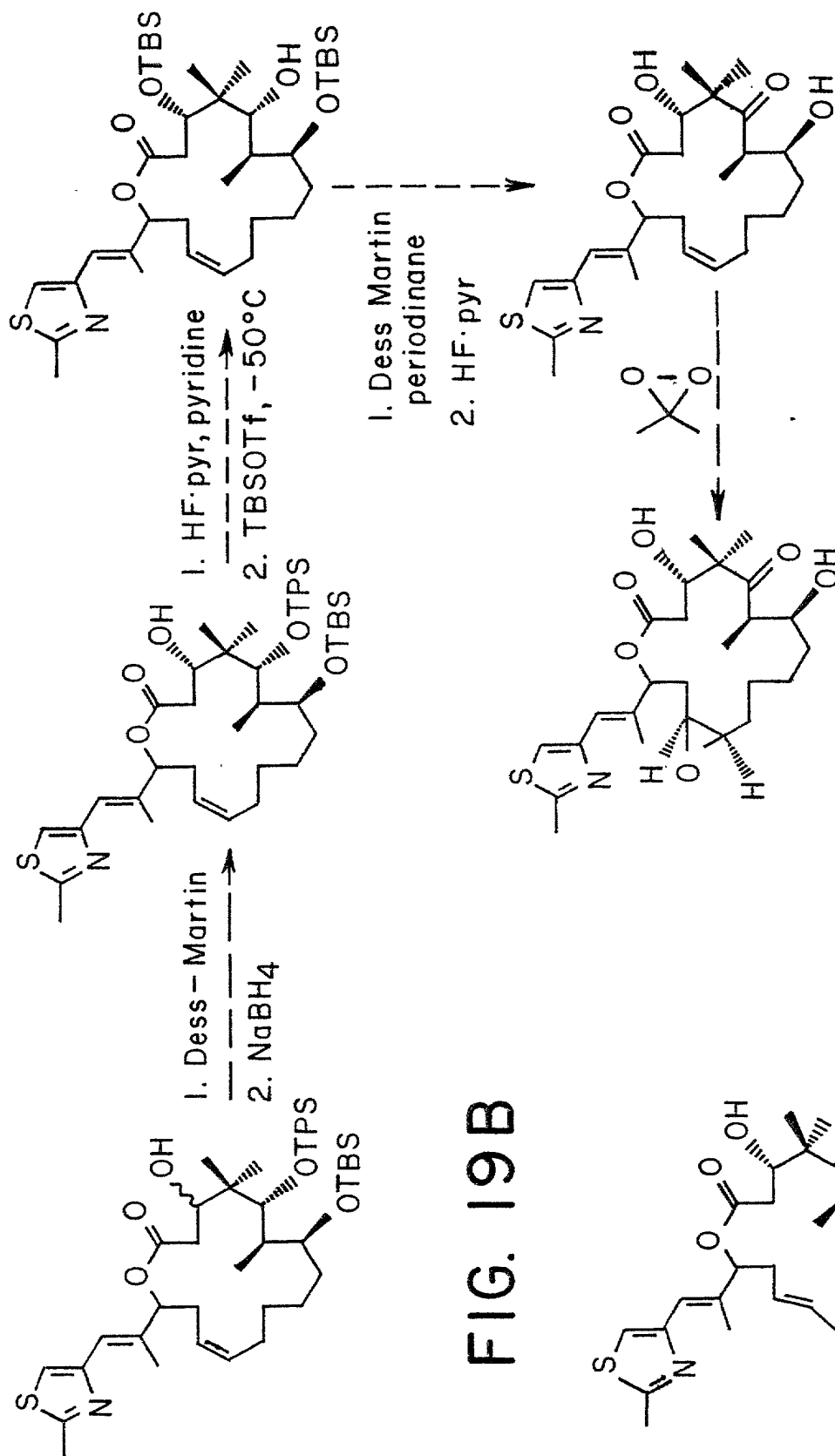
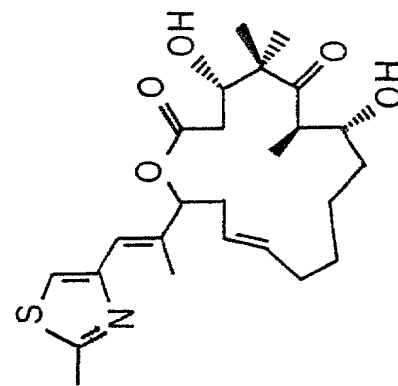


FIG. 19B



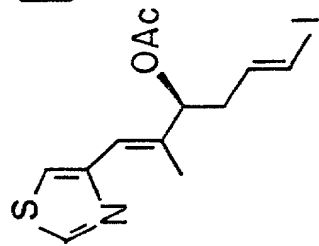


FIG. 19C

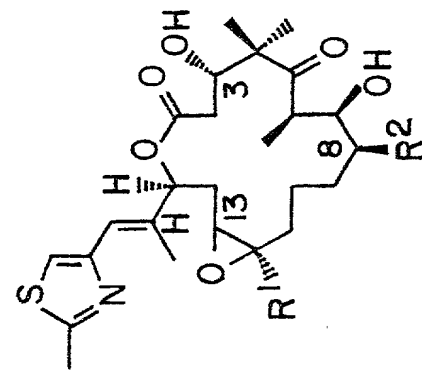
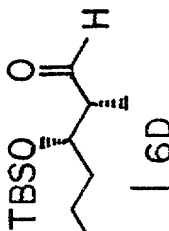
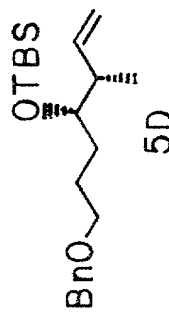
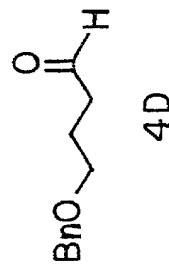


FIG. 20A

$R^1 = H, R^2 = Me$; epothilone A

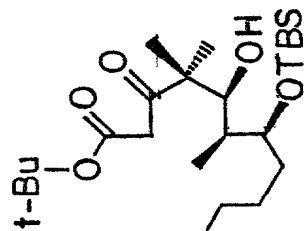
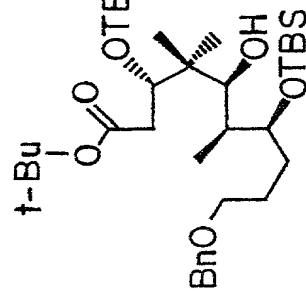
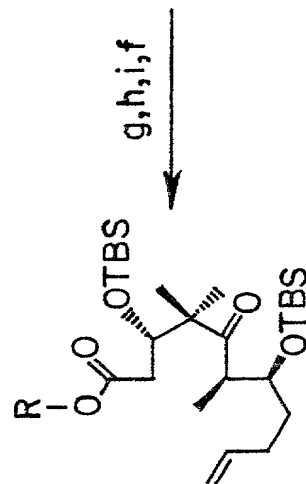
$R^1 = R^2 = Me$; epothilone B

$R^1 = R^2 = H$; Cg - desmethyl - epothilone A (3D)



TBS = Sit-buMe₂

FIG. 20B



k $\begin{cases} 9D \# R = t\text{-butyl} \\ 10D \# R = TBS \end{cases}$

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FIG. 21

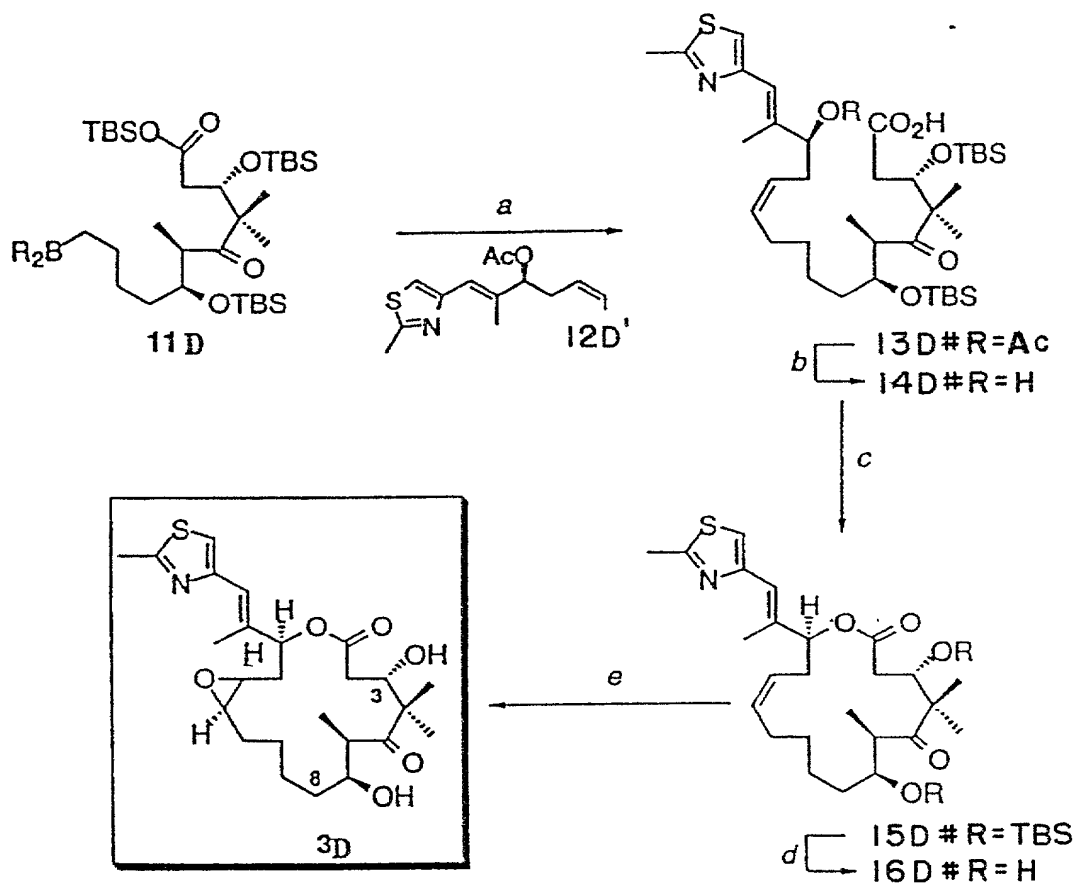


FIG. 22 A

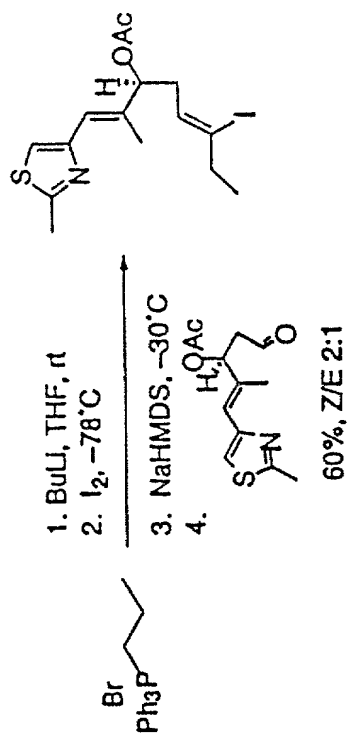


FIG. 22 B

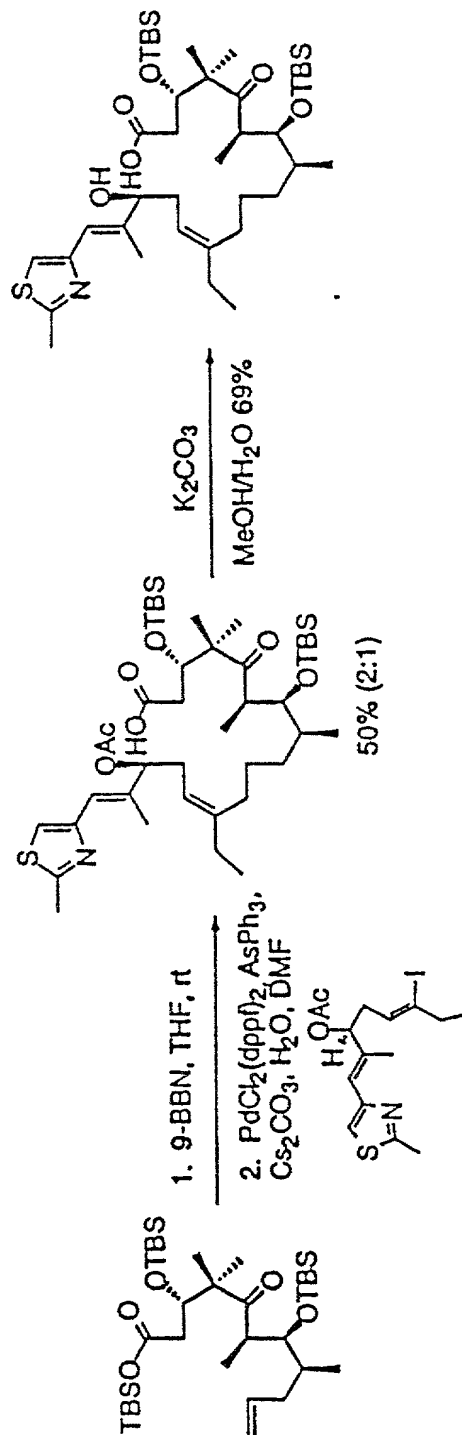


FIG. 22C

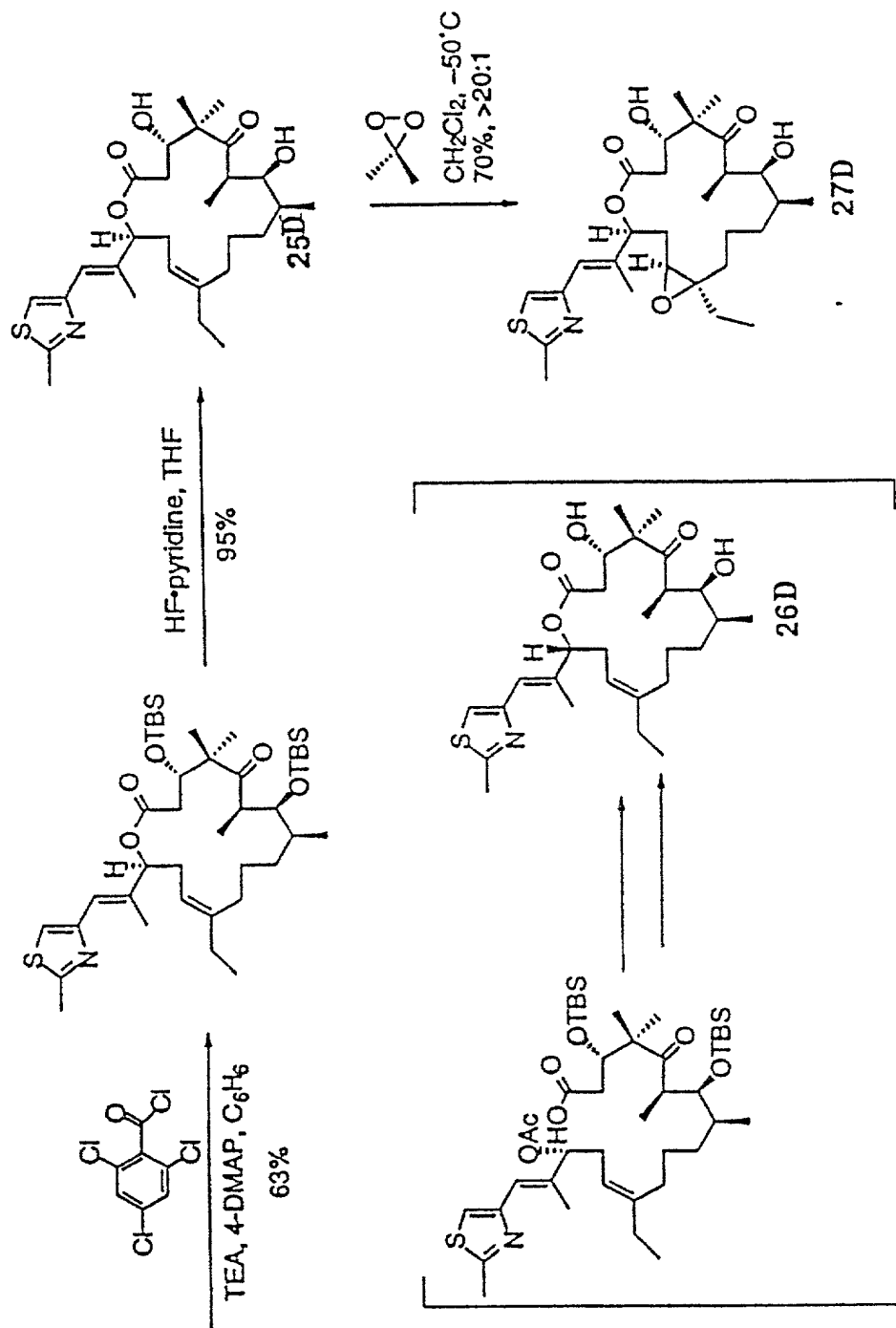


FIG. 23A

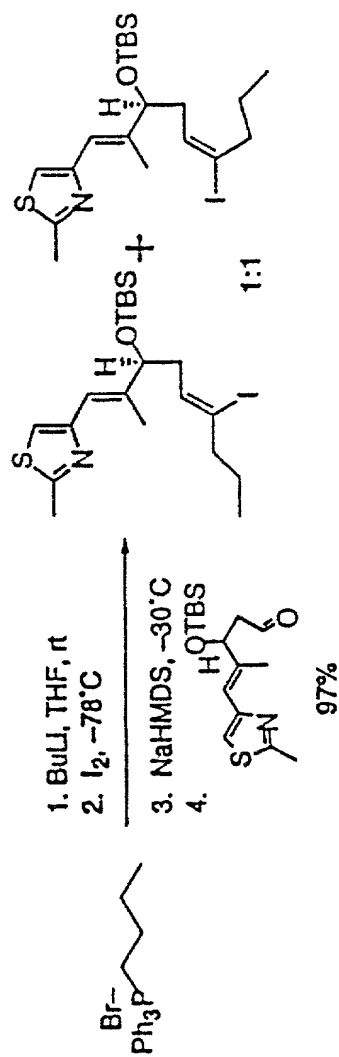


FIG. 23B

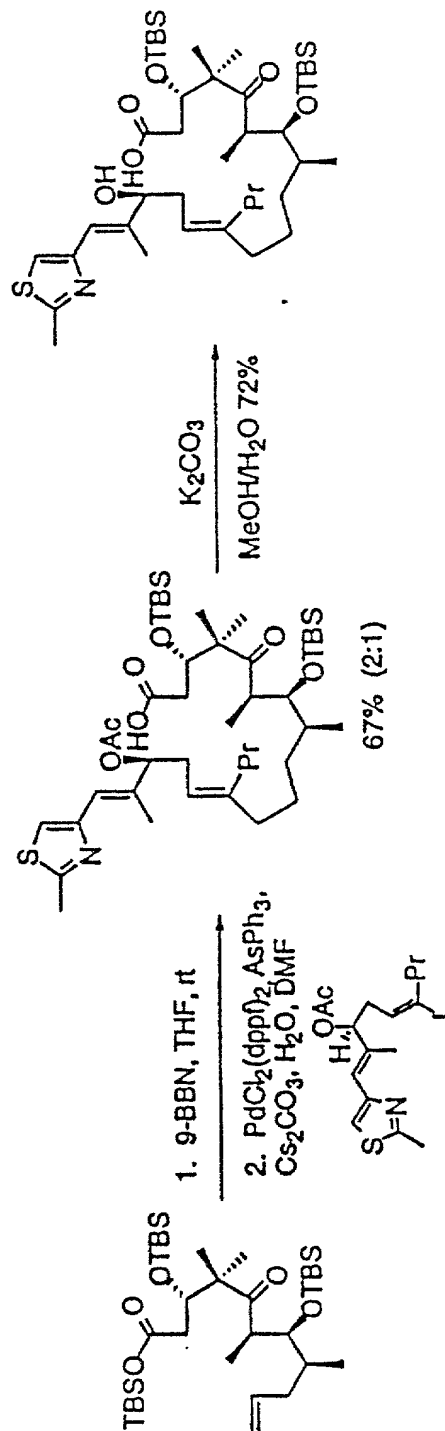


FIG. 23C

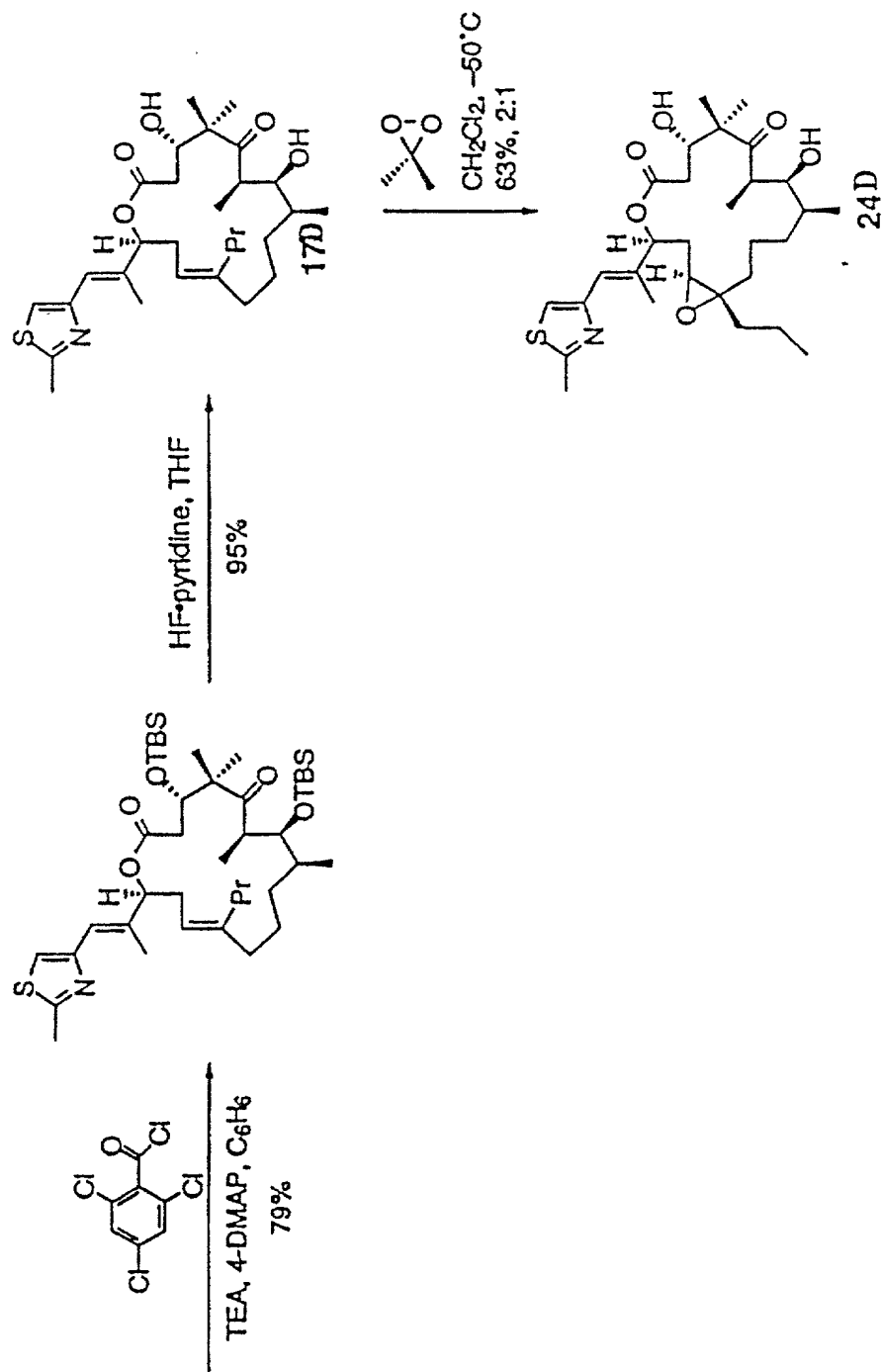


FIG. 24A

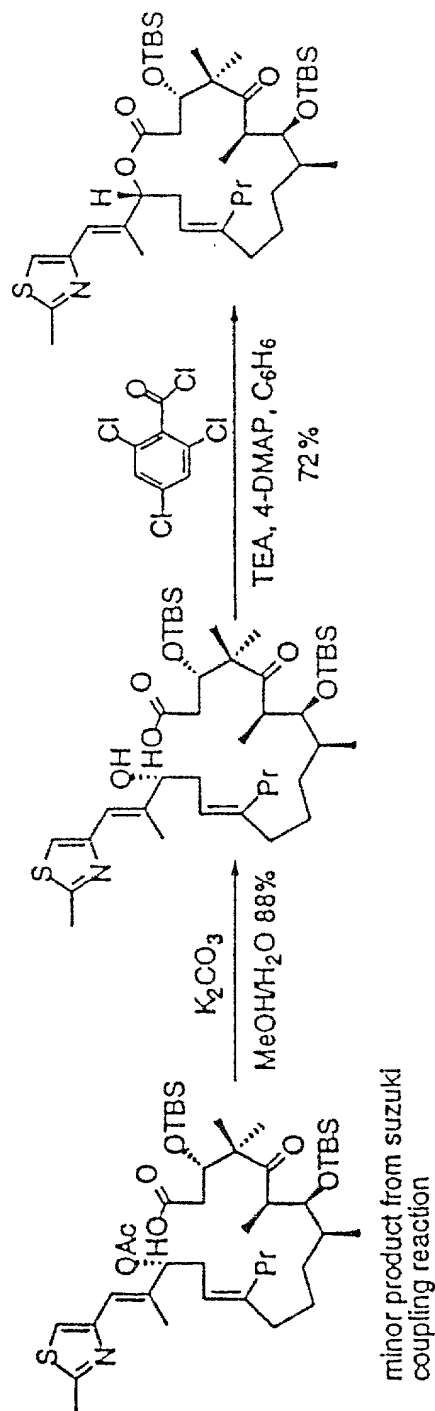


FIG. 24B

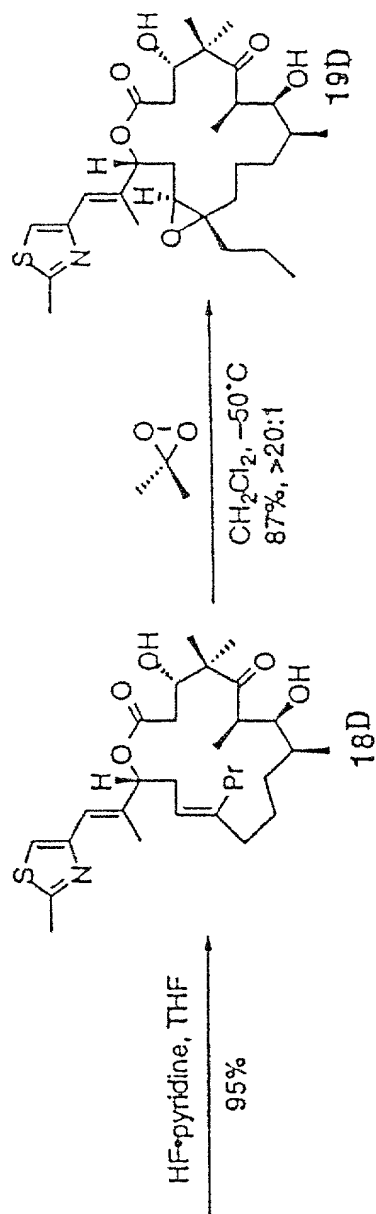


FIG. 25A

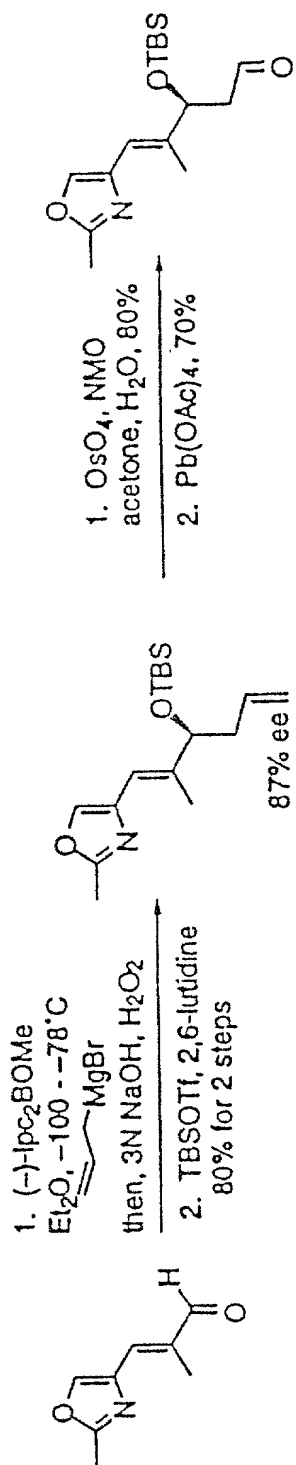


FIG. 25B

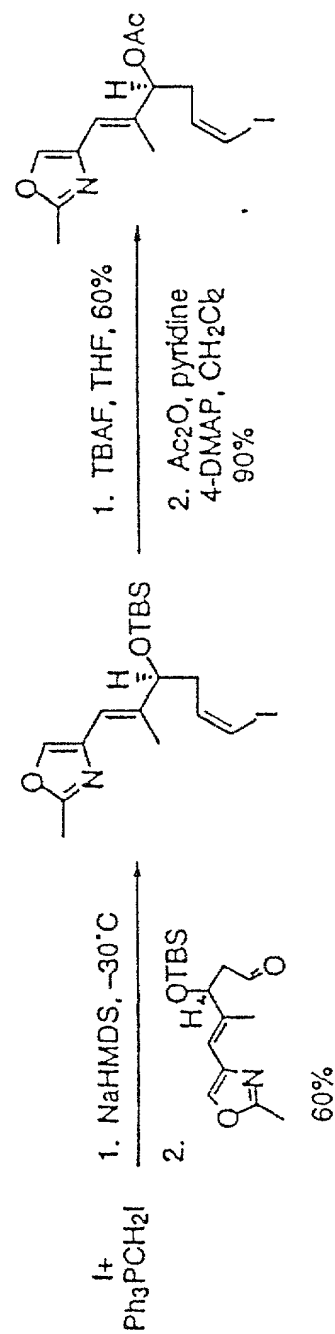


FIG. 25C

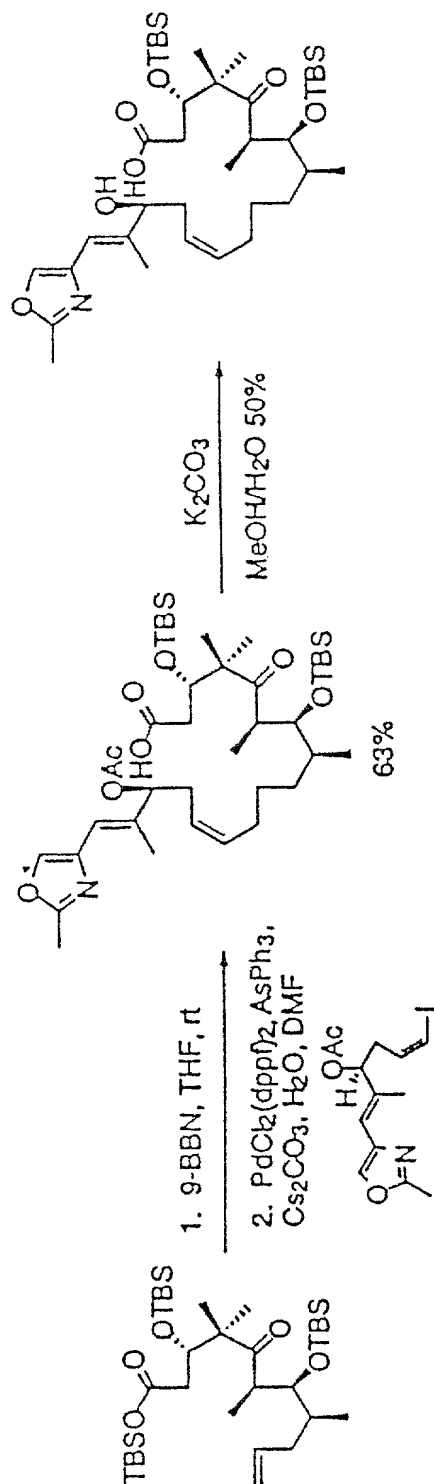


FIG. 25D

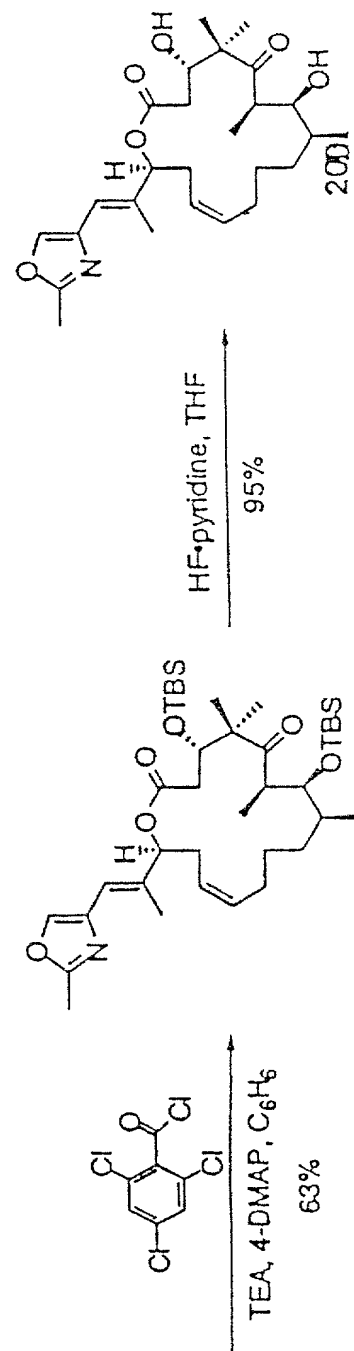


FIG. 26A

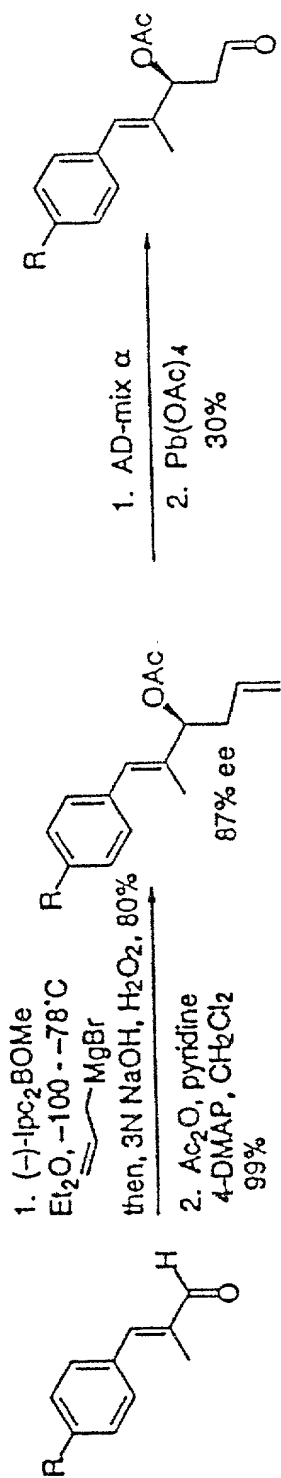
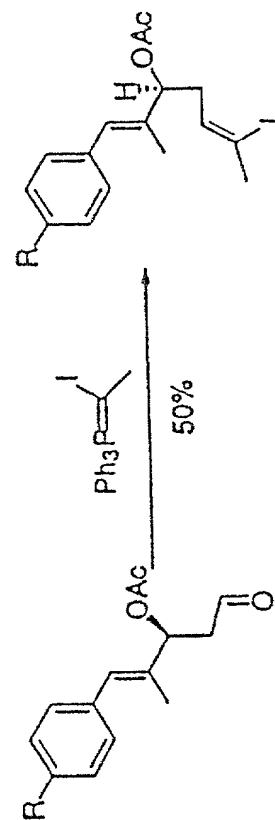


FIG. 26B



R = H, F, CF₃,
 R=H is the only compound
 completed, F and CF₃ are nearly
 completed

Reaction scheme showing the synthesis of a macrocyclic ketone derivative:

Starting material (a linear precursor with a 4-R-phenyl group) reacts with 9-BBN, THF, and PdCl₂(dppf)₂·AsPh₃ in Cs₂CO₃, H₂O, DMF at room temperature (rt) to form an intermediate macrocyclic ketone in 50% yield.

The intermediate macrocyclic ketone then reacts with K₂CO₃ in MeOH/H₂O to yield the final macrocyclic ketone product in 85% yield.

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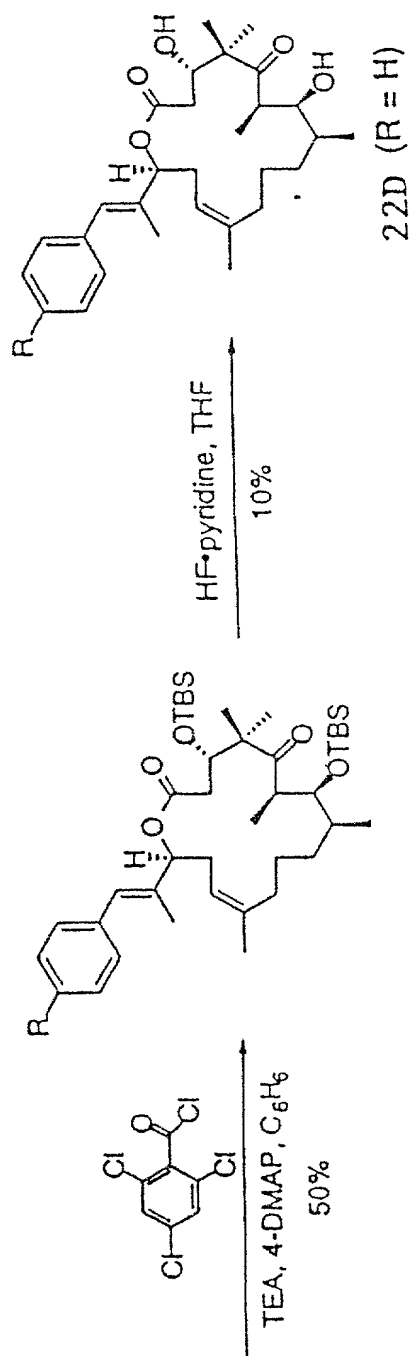


FIG. 27B

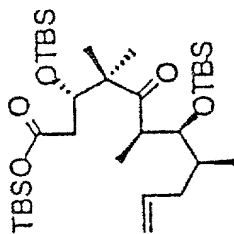
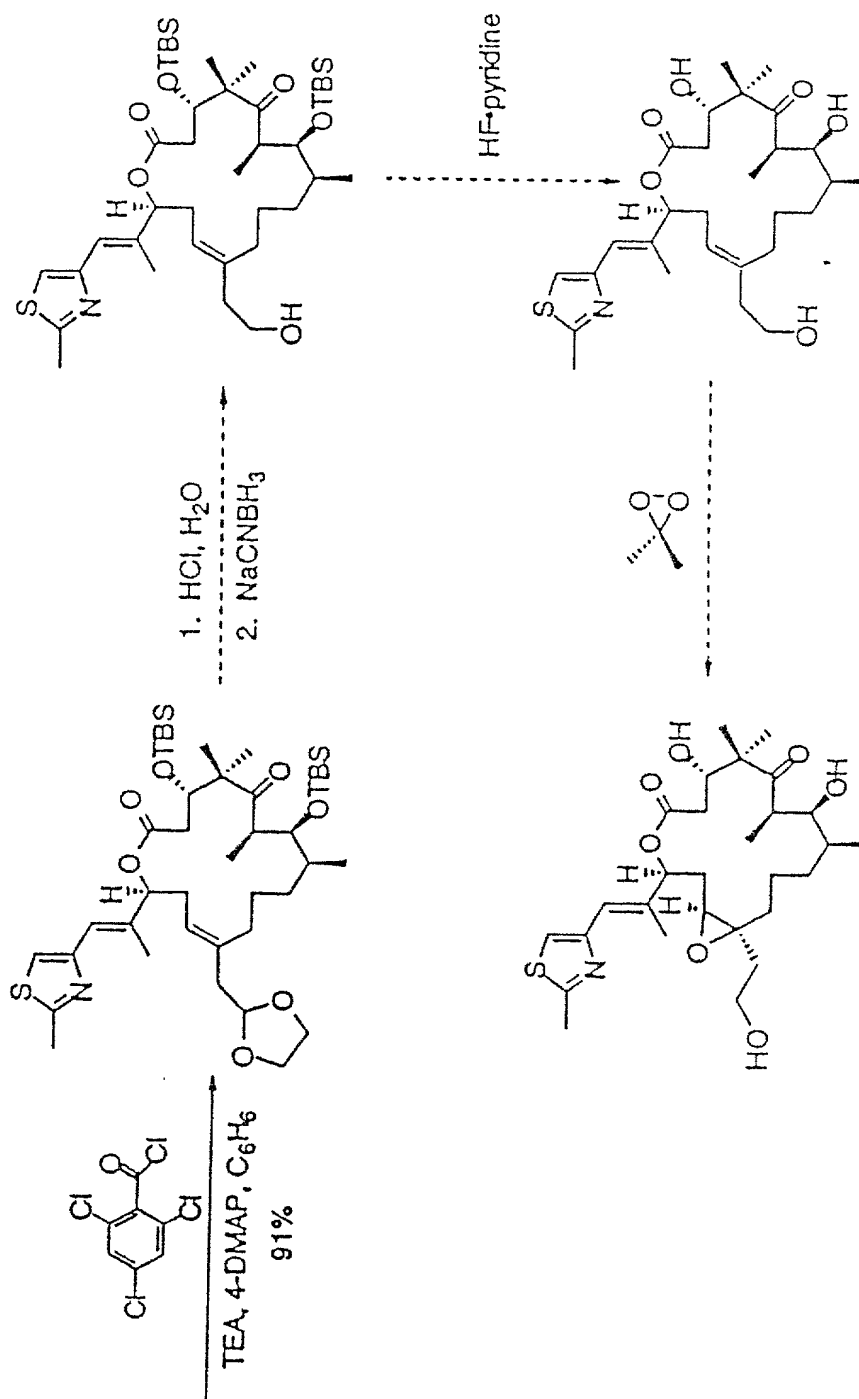
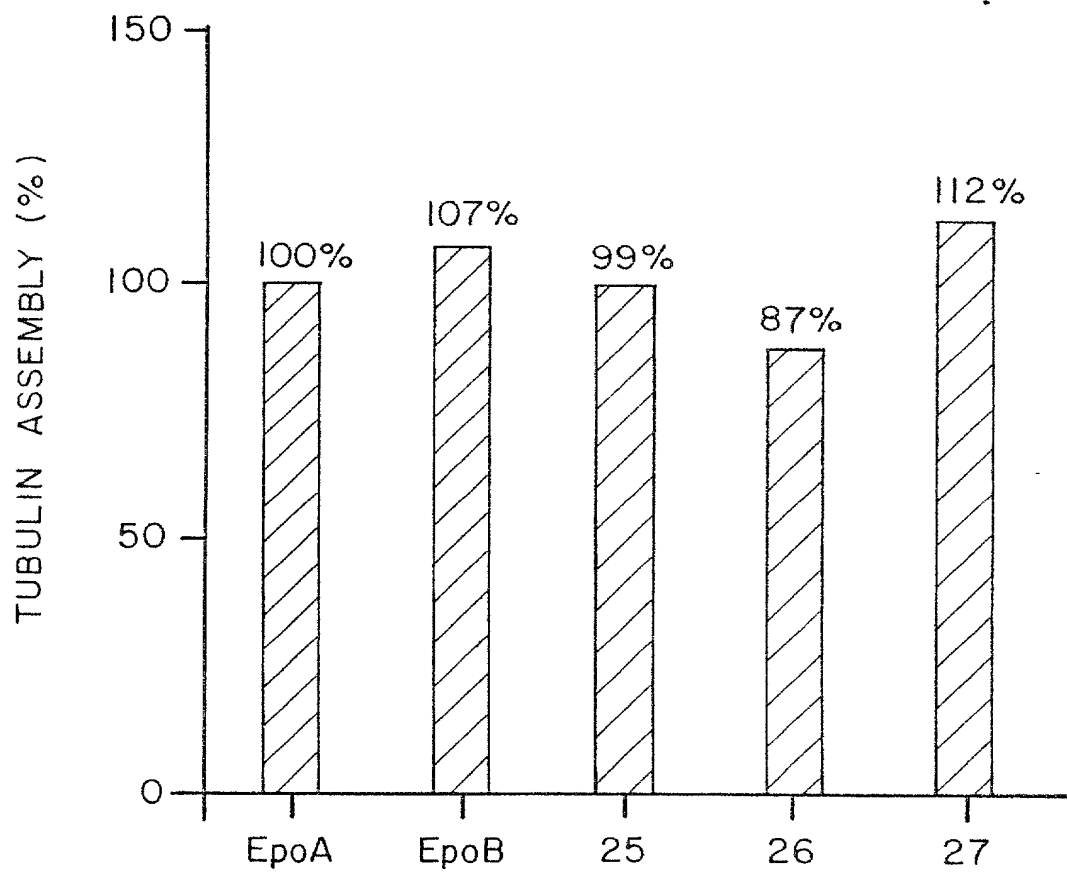


FIG. 27C



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FIG. 28A



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FIG. 28B

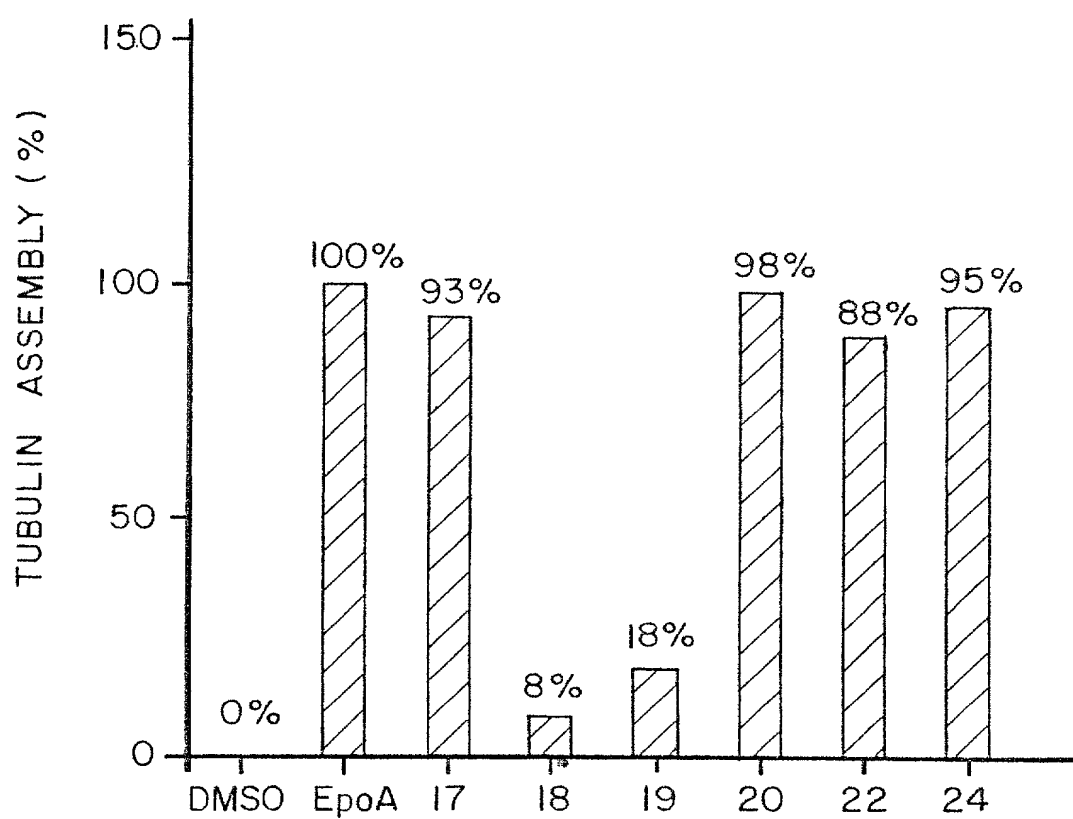


FIG. 29

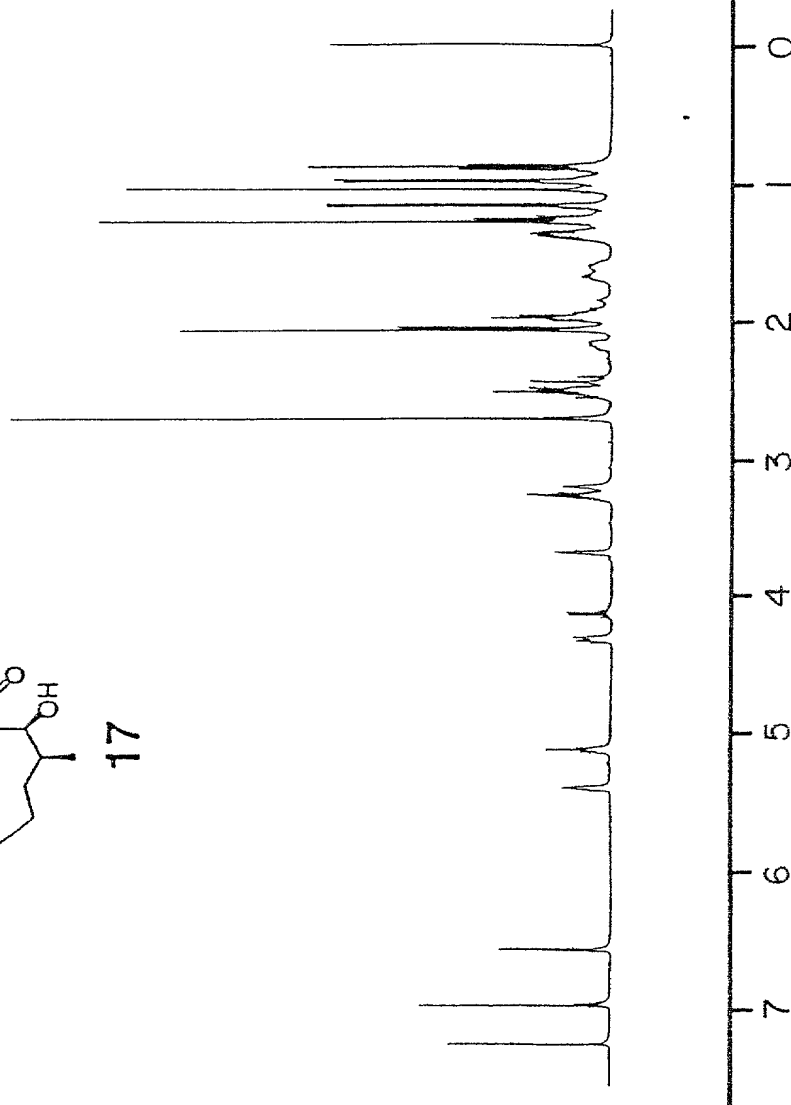
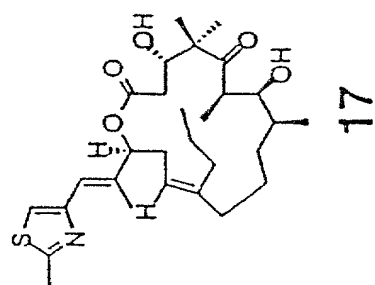
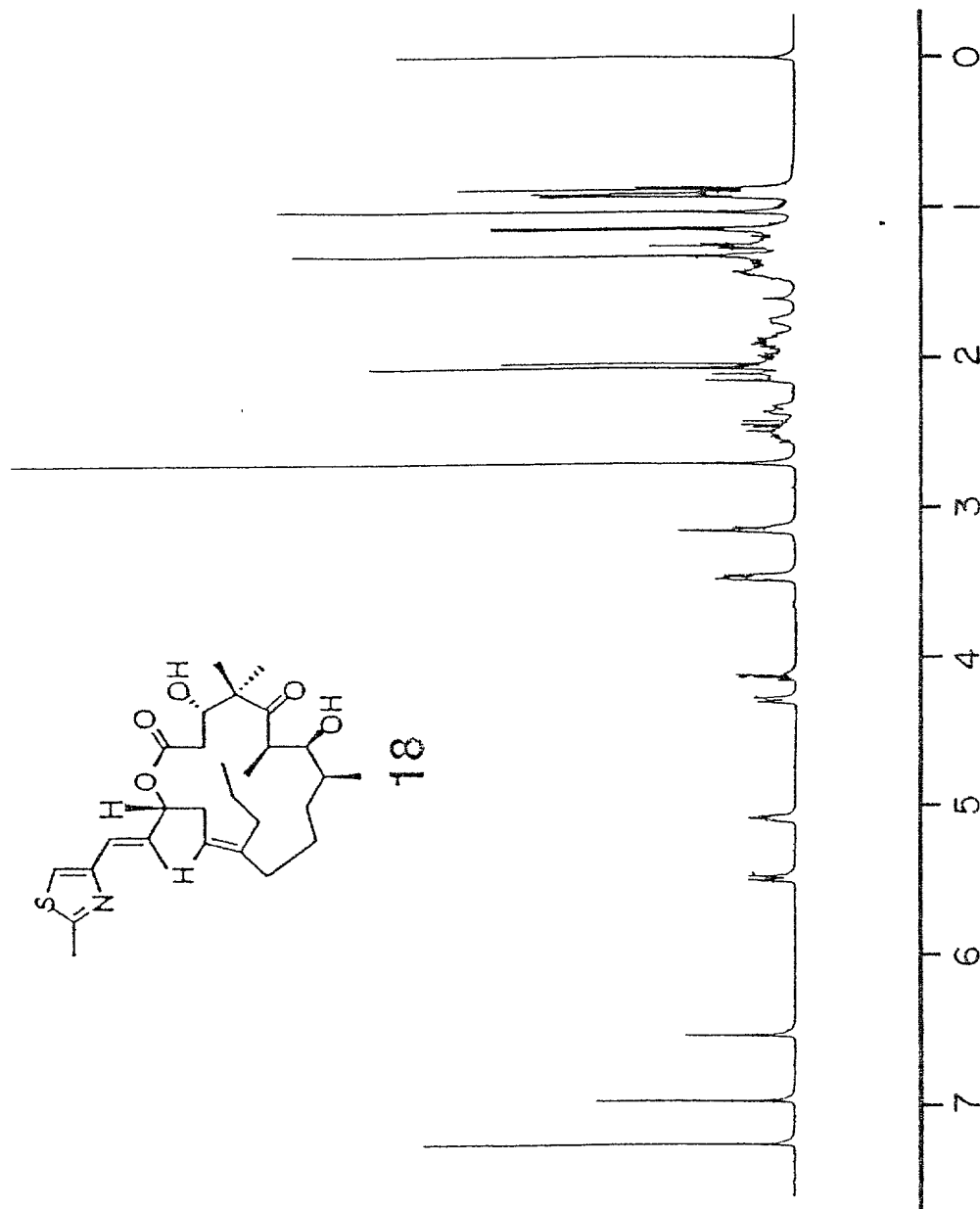
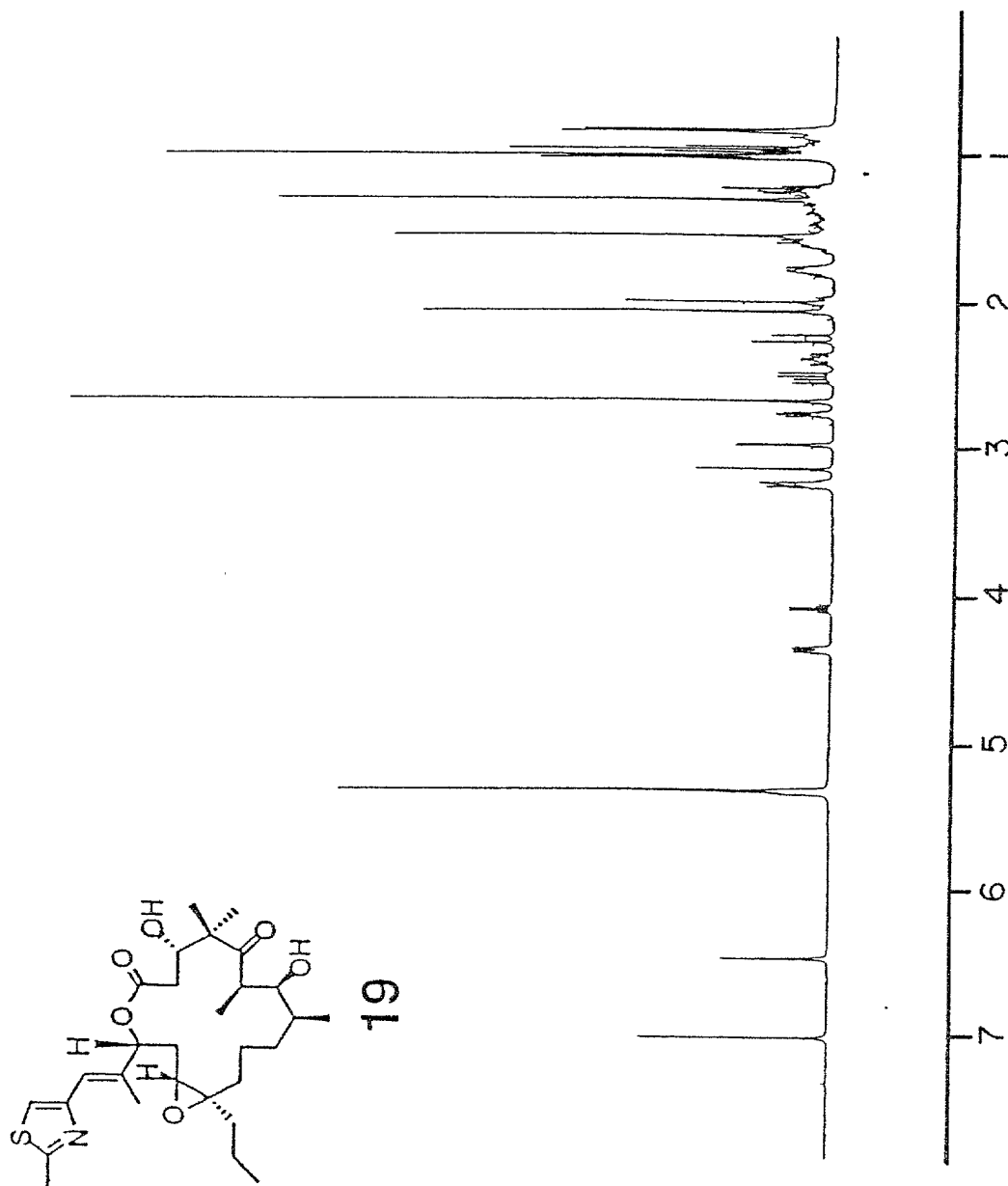


FIG. 30

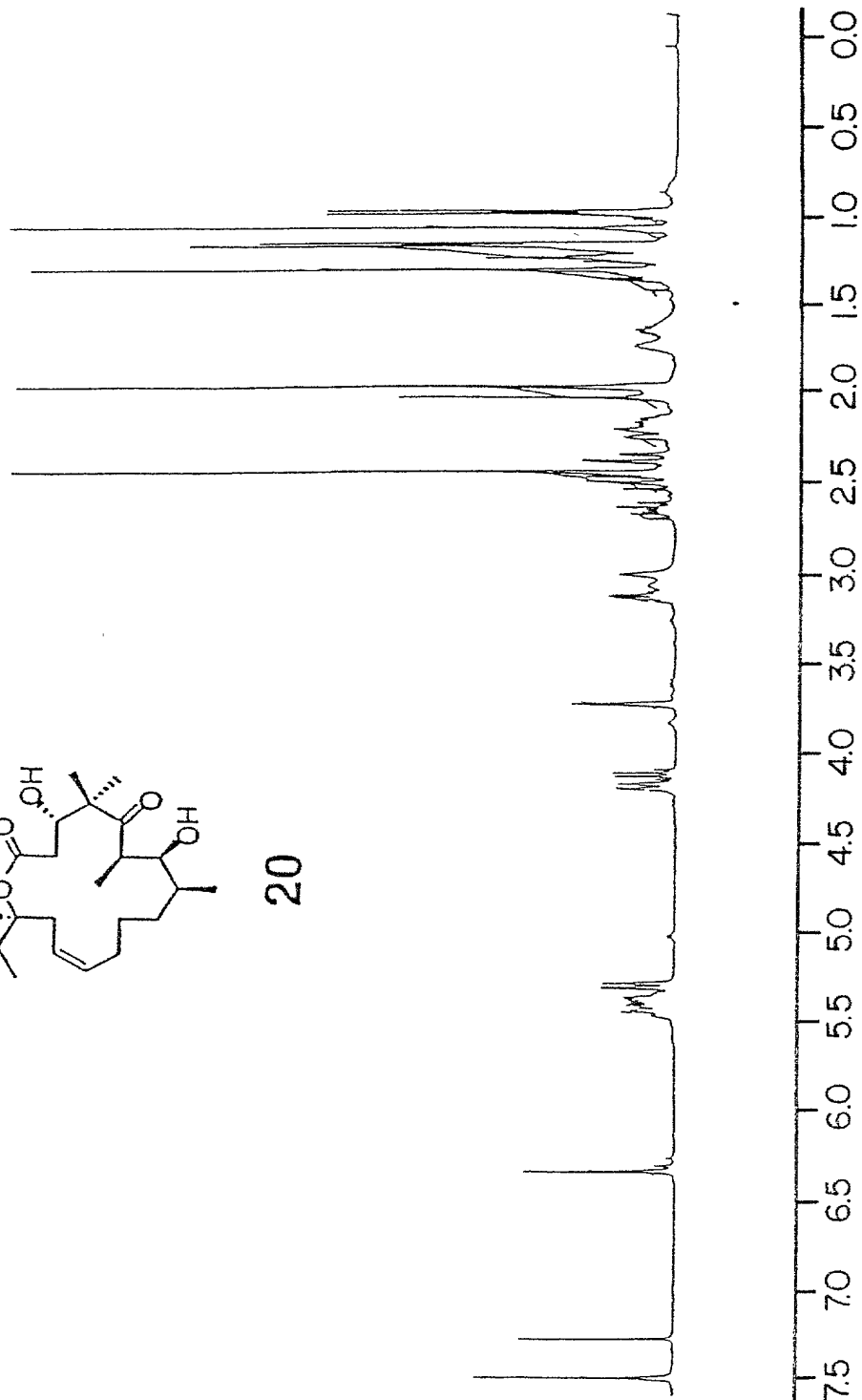
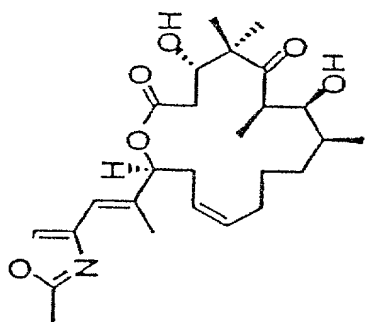


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FIG. 31



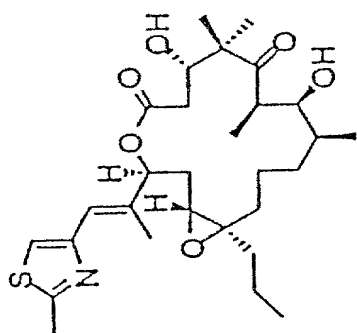
20



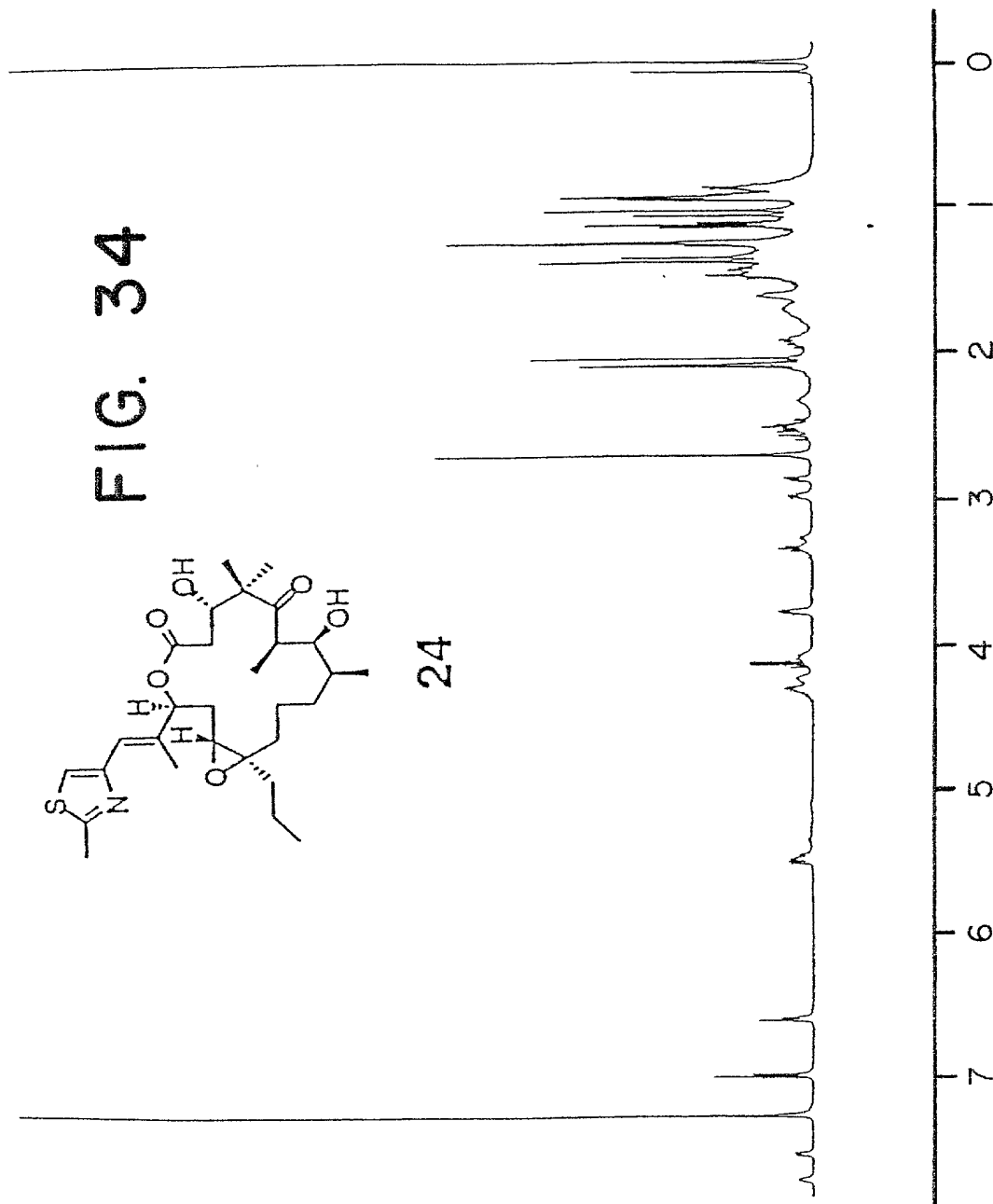
The chemical structure shows a complex polycyclic molecule, likely a steroid derivative. It features a phenyl group attached to a side chain, a carboxylic acid group, and a ketone group. The structure is highly detailed, showing multiple rings and functional groups.

Chemical structure of compound 22 is shown. The structure is a complex polycyclic molecule featuring a central ring system with multiple substituents, including a carboxylic acid group, a hydroxyl group, and a phenyl ring. The structure is labeled 22.

FIG. 34

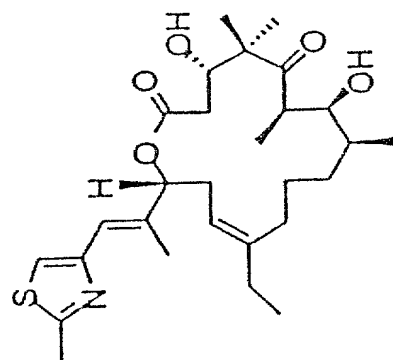


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FIG. 36



26

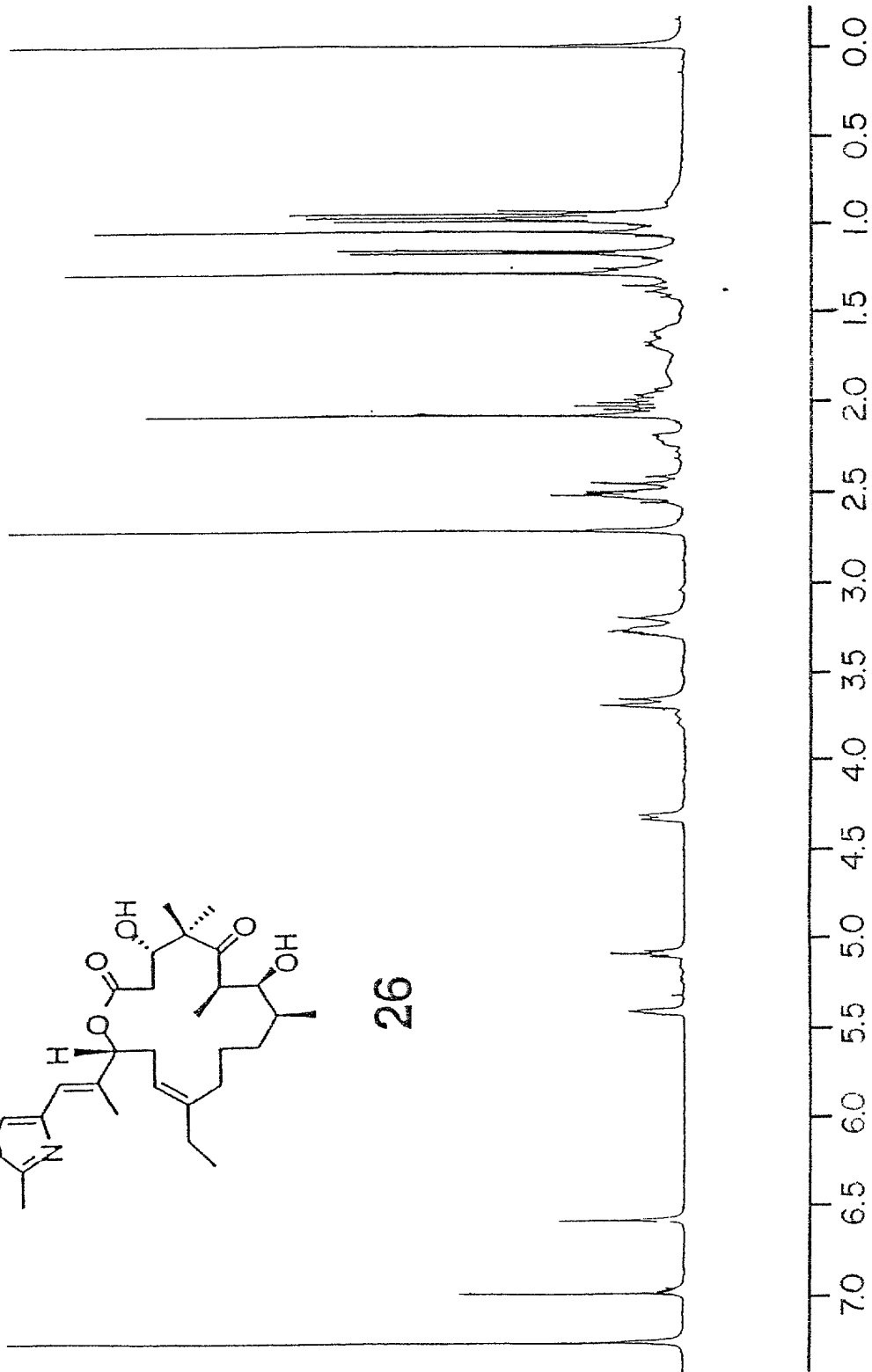


FIG. 37

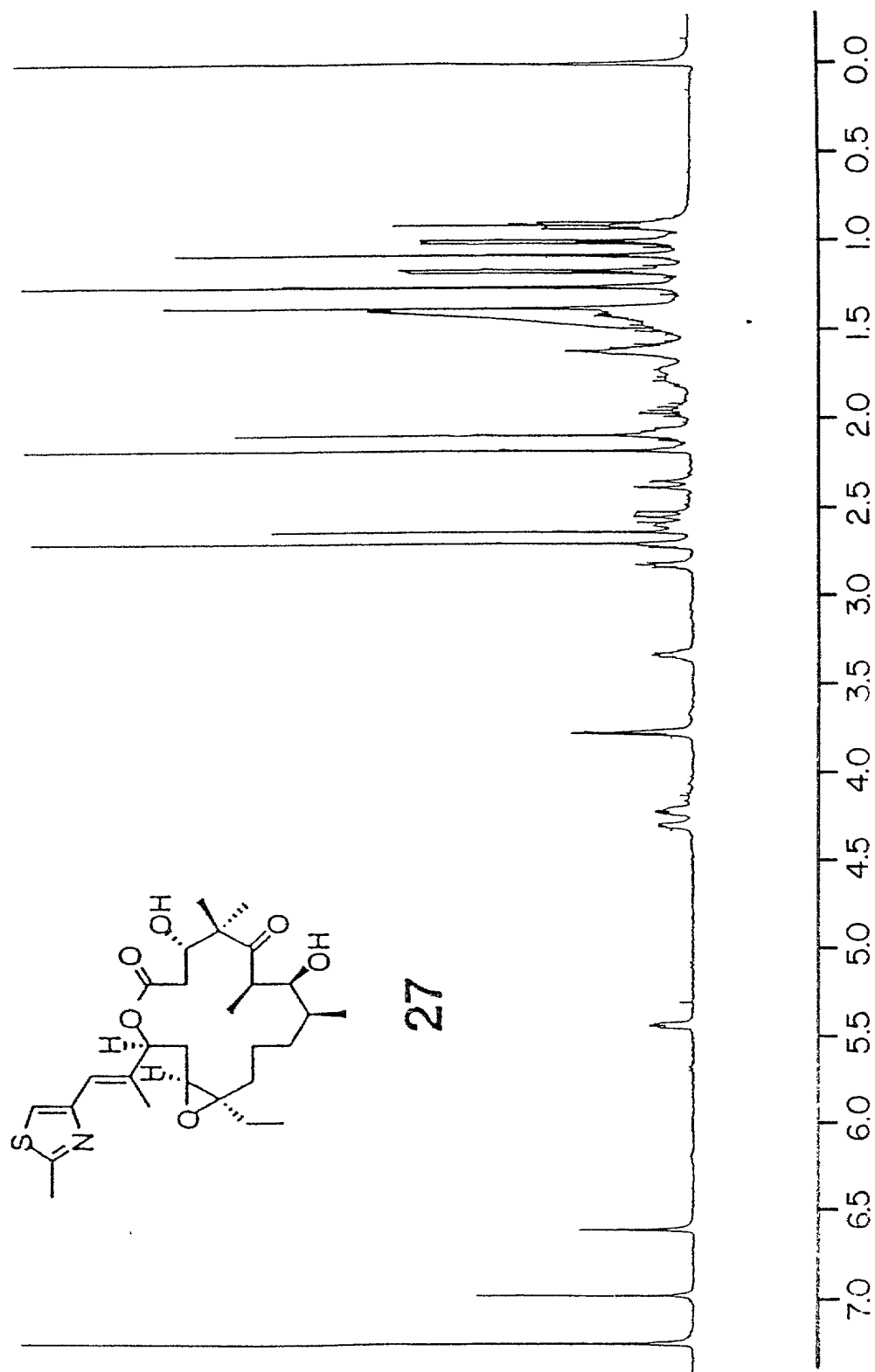


FIG. 38

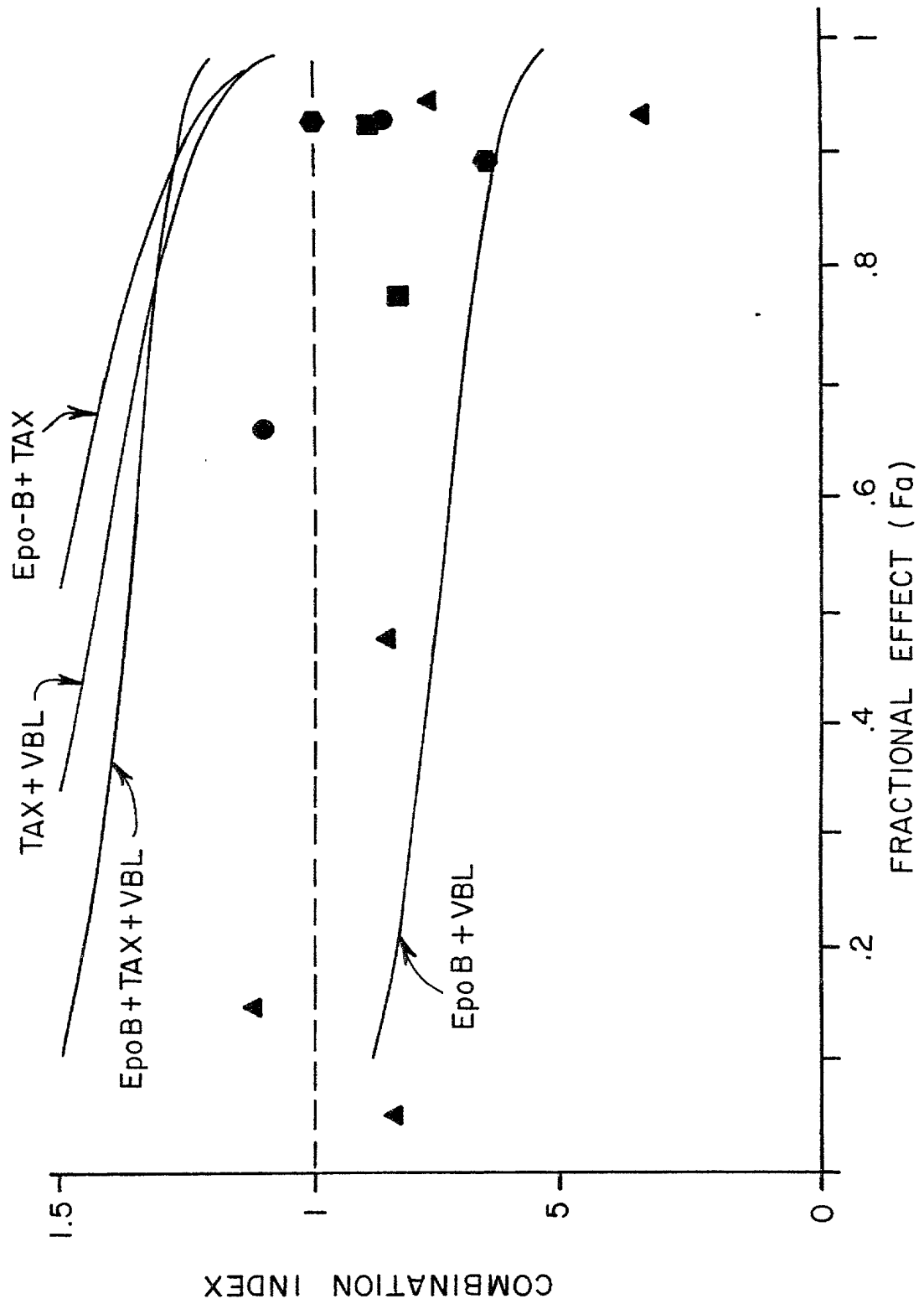
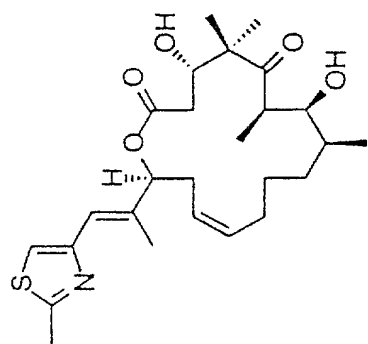
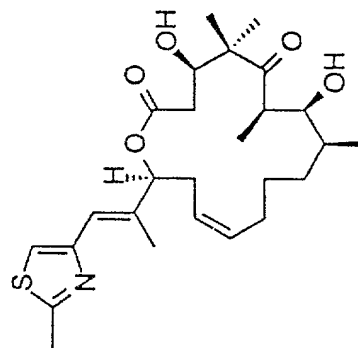
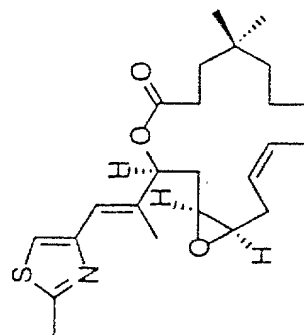
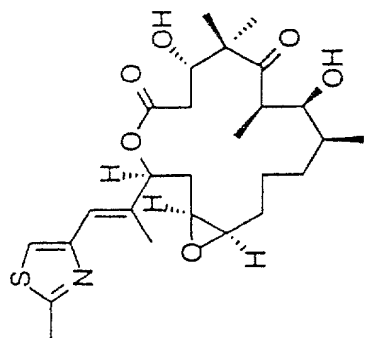


FIG. 39A



desoxyepothilone A

1(0.022)
[0.012]**4**(2.12)
[43.0]**3**(271.1)
[22.4]

epothilone A

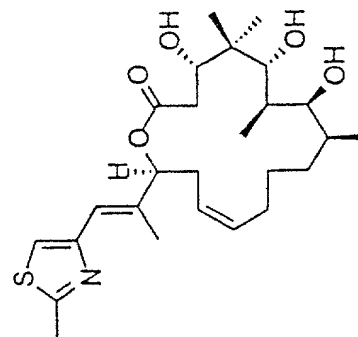
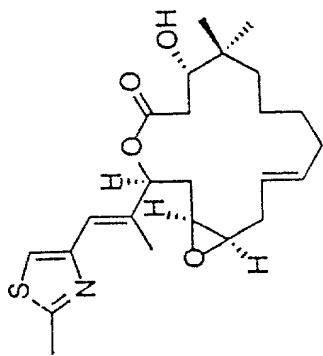
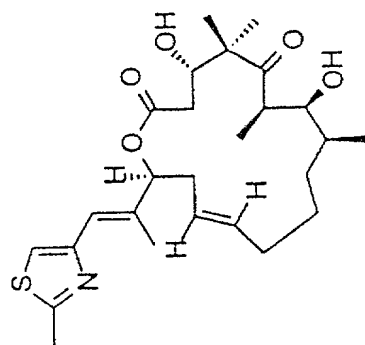
(0.0027)
[0.020]**2**(14.23)
[6.28]

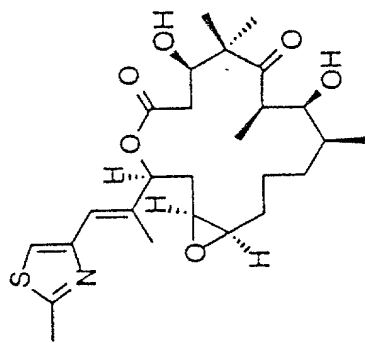
FIG. 39B



7
(7.36)
[9.82]

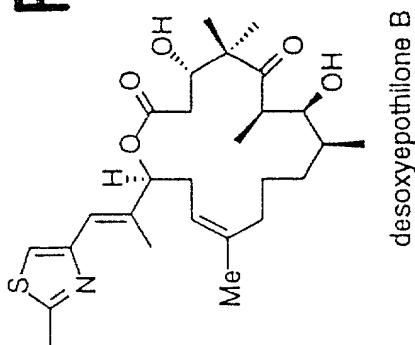


6
(0.052)
[0.035]

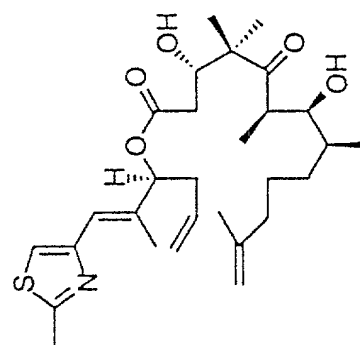


5
(>20)
[35.2]

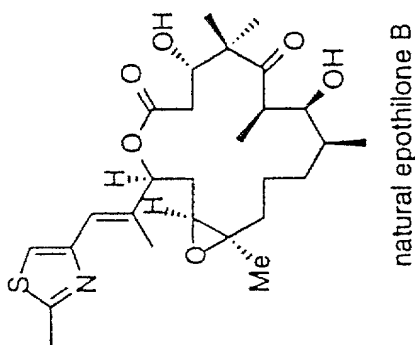
FIG. 40A



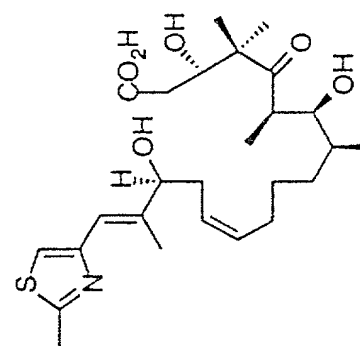
10
(0.0095)
[0.017]



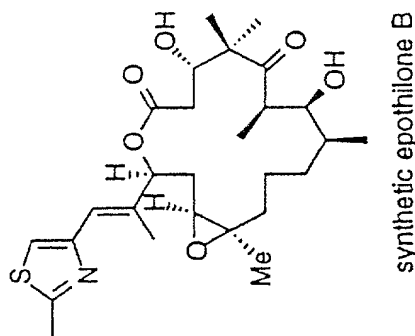
13
(11.53)
[5.63]



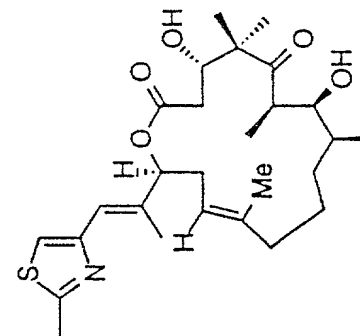
9
(0.00017)
[0.0012]



12
(0.79)
[>5]



8
(0.00044)
[0.0026]



11
(0.090)
[0.262]

FIG. 40B

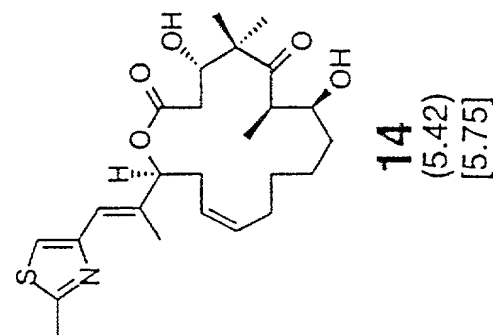
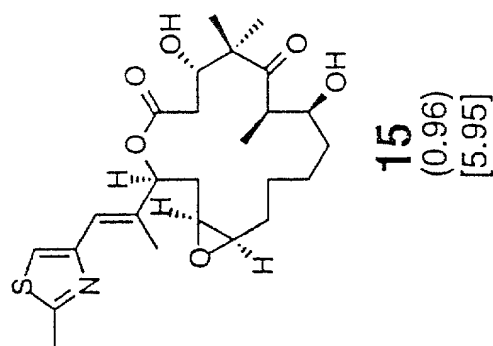
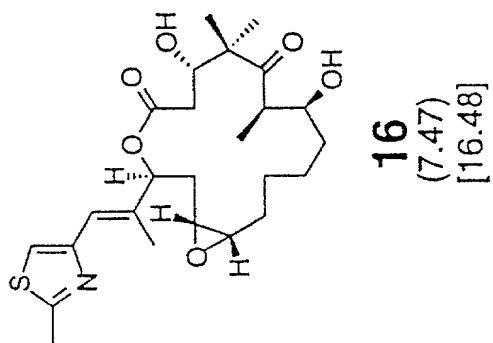


FIG. 41A

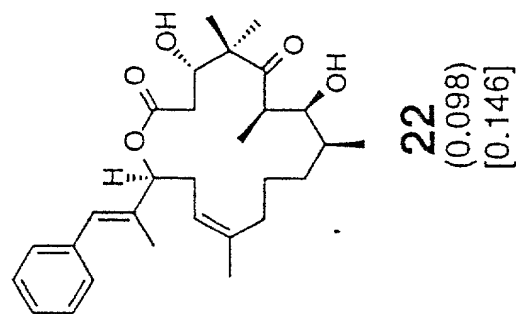
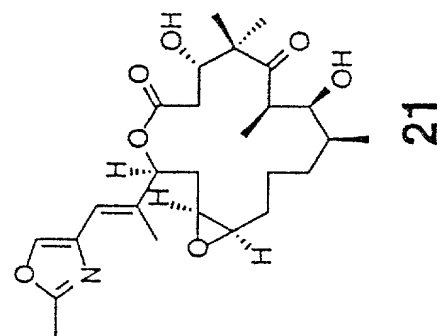
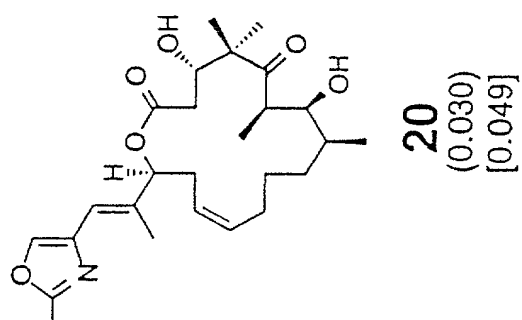
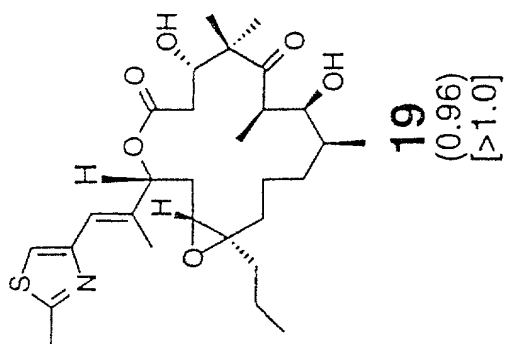
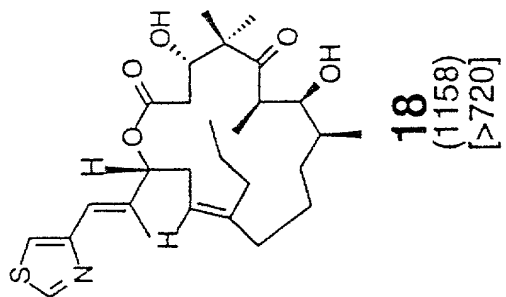
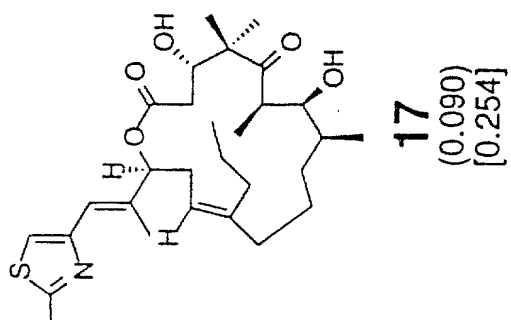
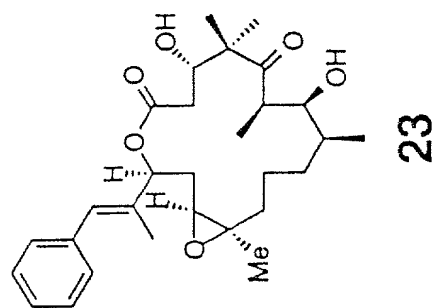
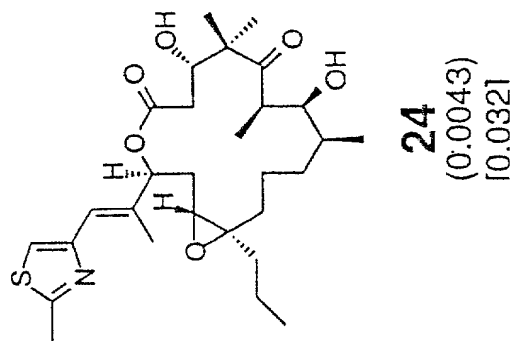


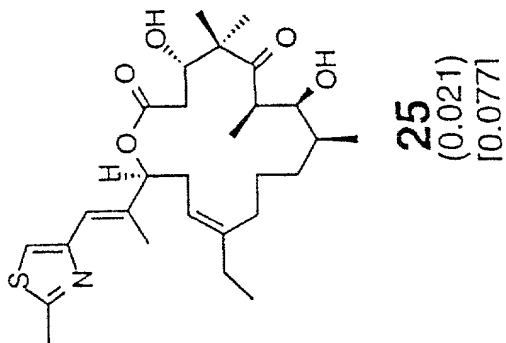
FIG. 41B



23



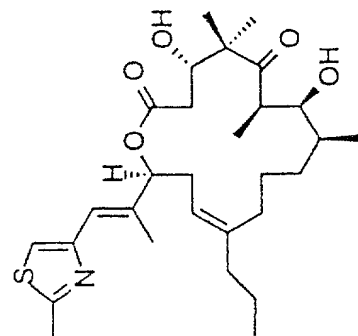
24

(0.0043)
[0.032]

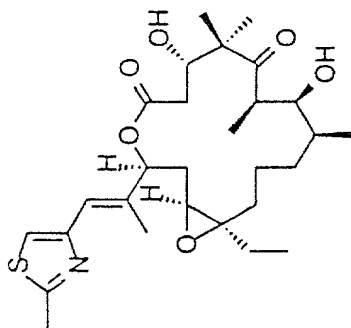
25

(0.021)
[0.077]

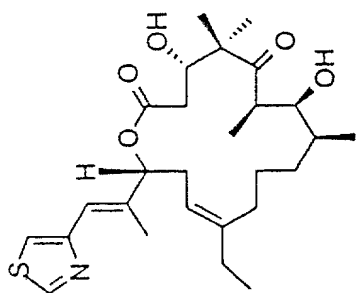
FIG. 42A



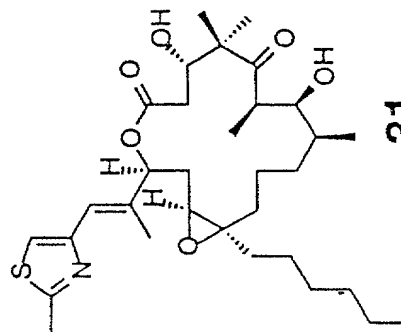
28
(0.039)
[0.067]



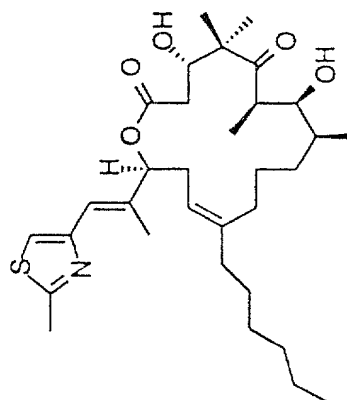
27
(0.0010)
[0.0072]



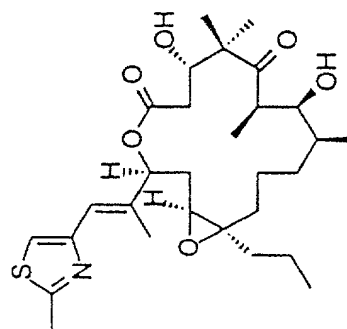
26
(0.055)
[0.197]



31
(0.027)
[0.049]



30
(0.044)
[0.108]



29
(0.0038)
[0.0064]

FIG. 42B

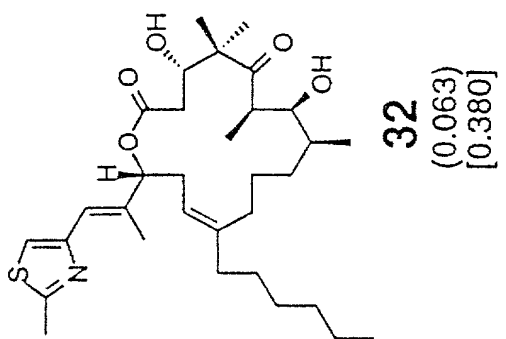
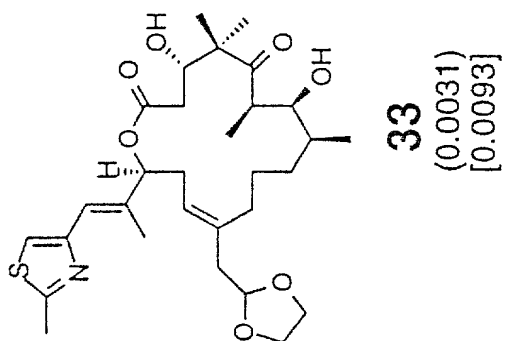
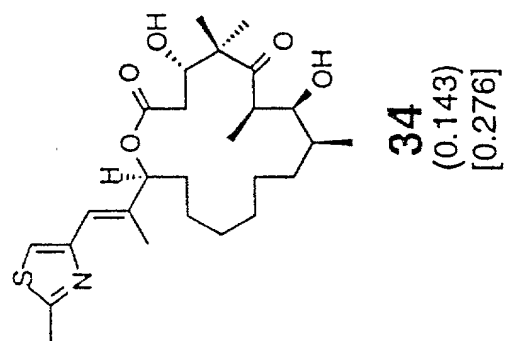


FIG. 42C

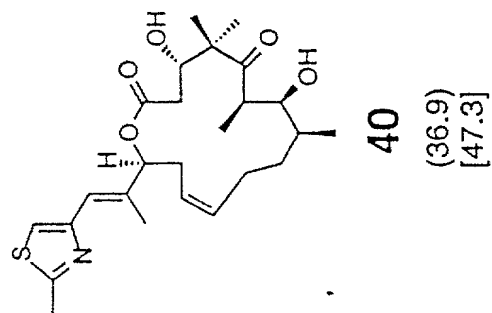
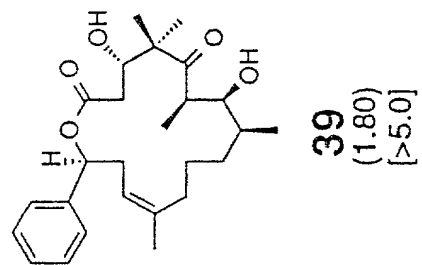
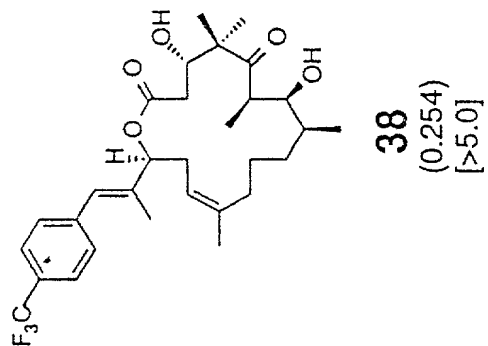
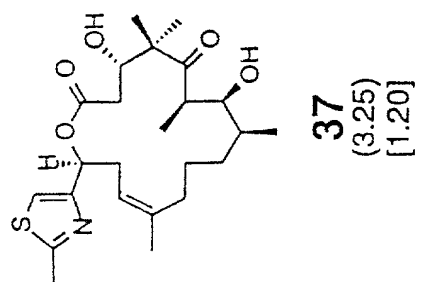
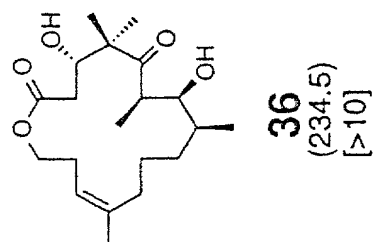
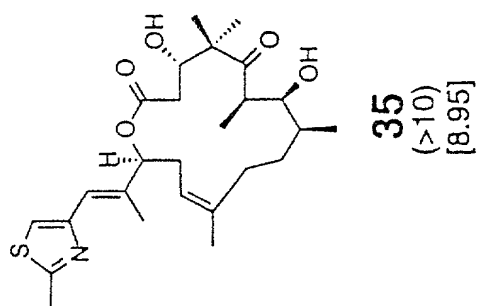


FIG. 42D

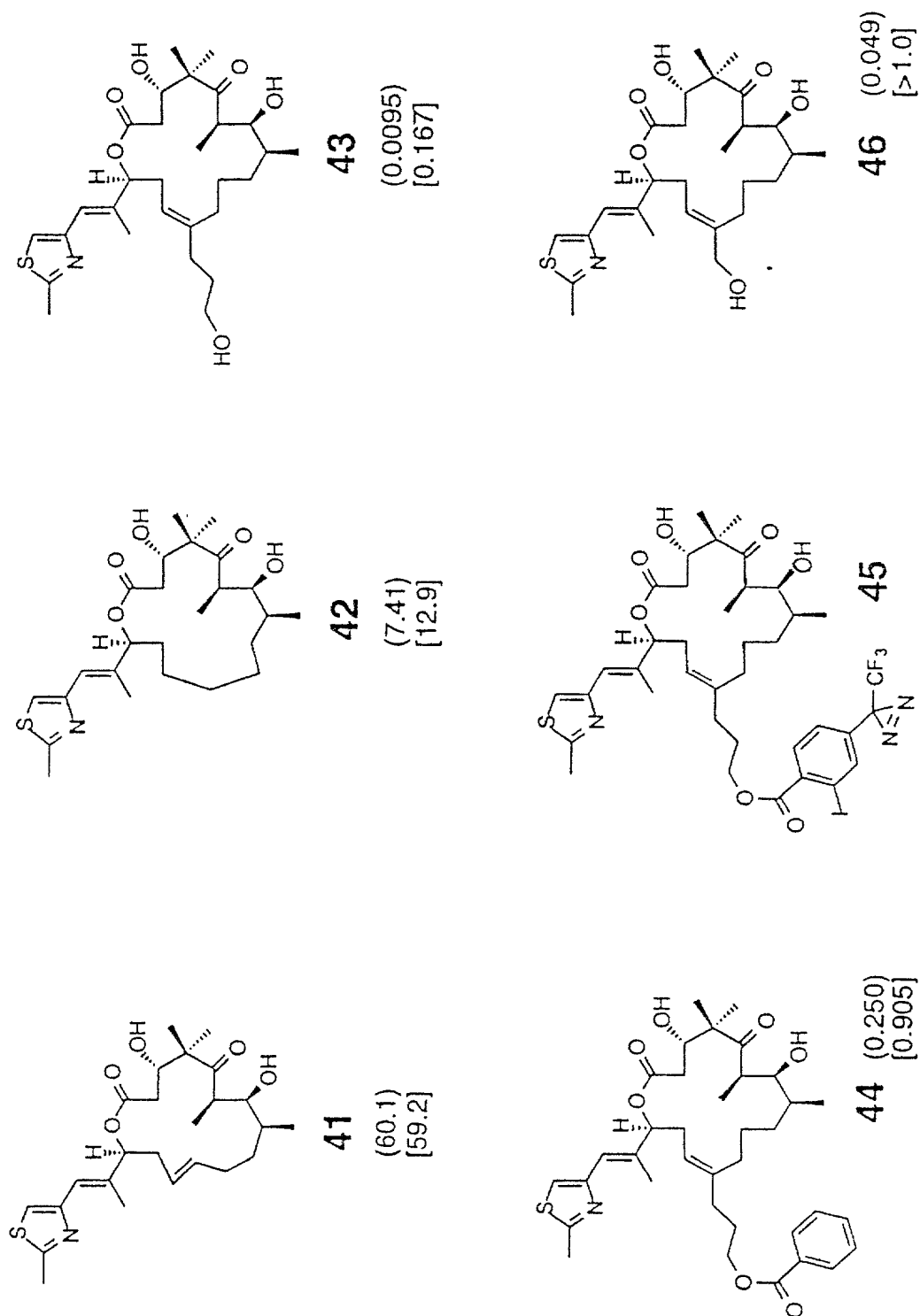
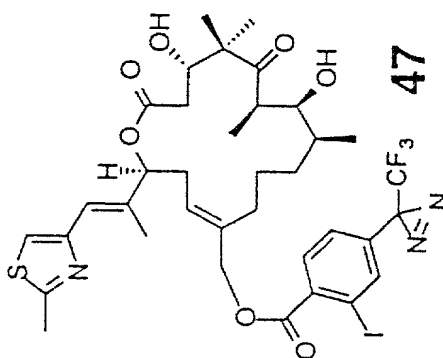
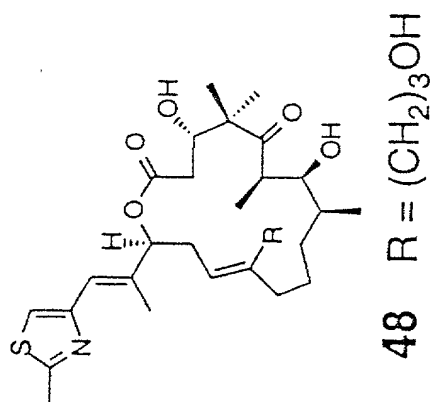
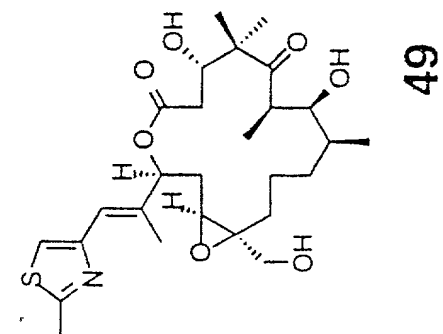
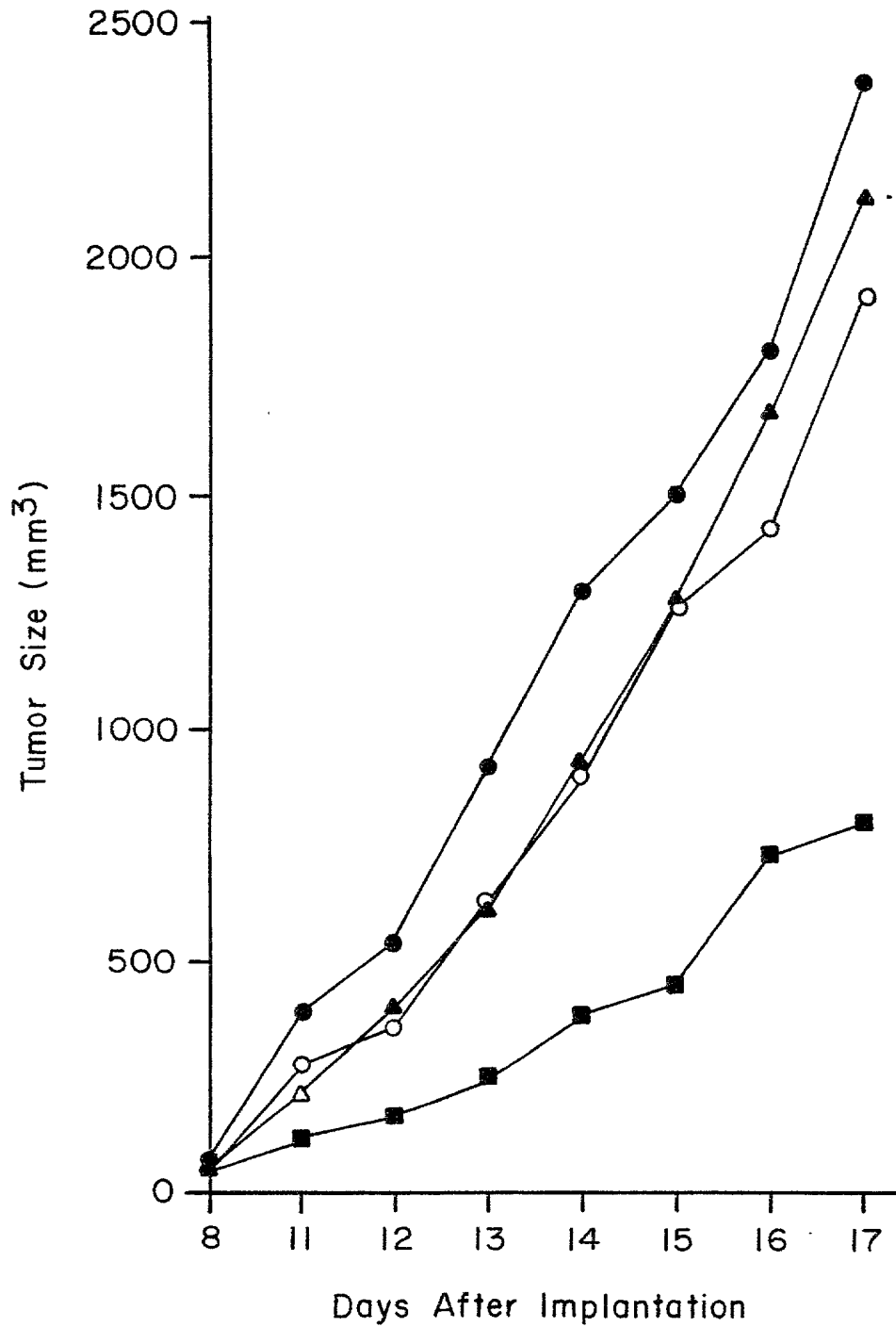


FIG. 42E



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FIG. 43A



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FIG. 43 B

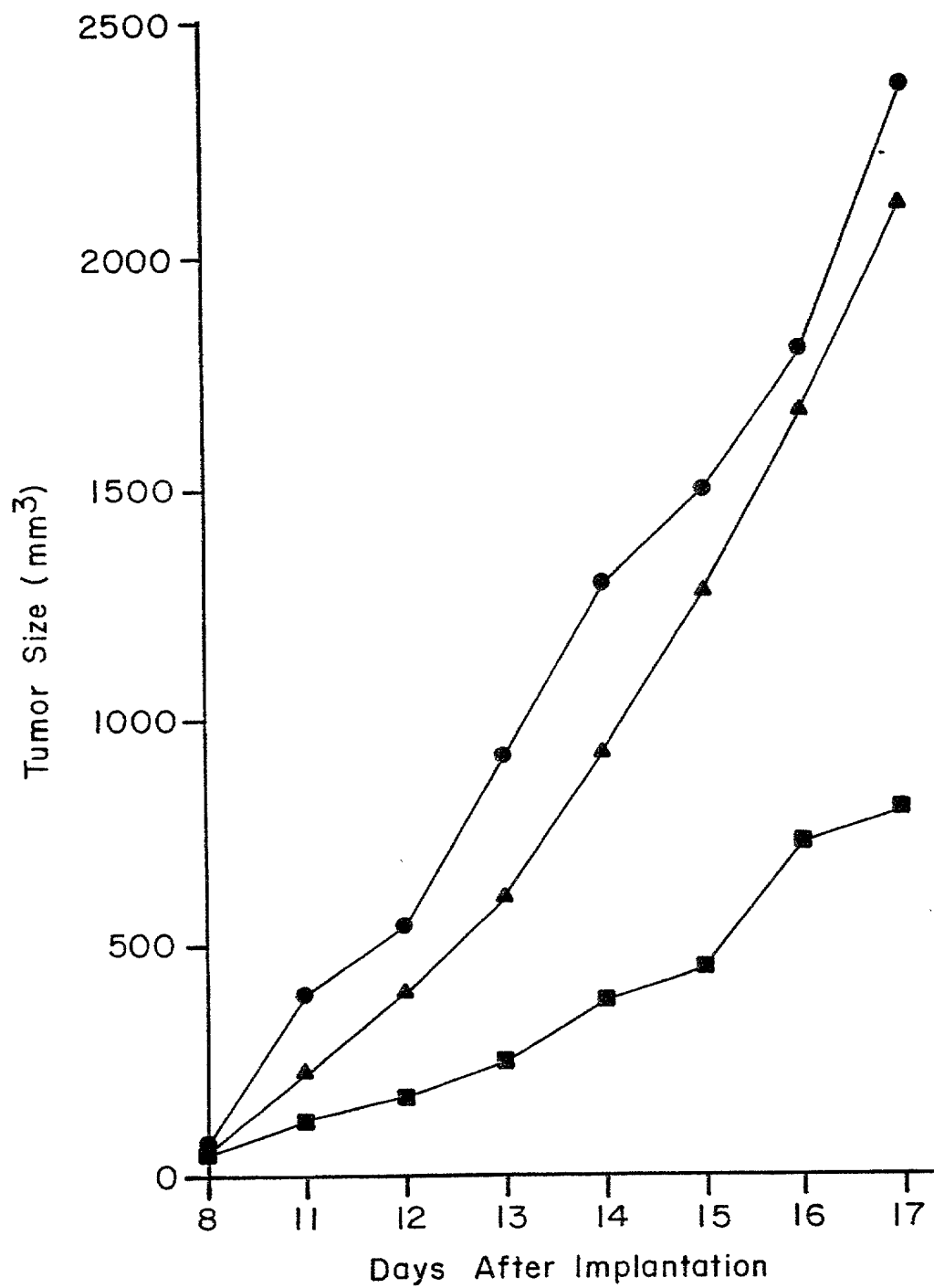


FIG. 44A

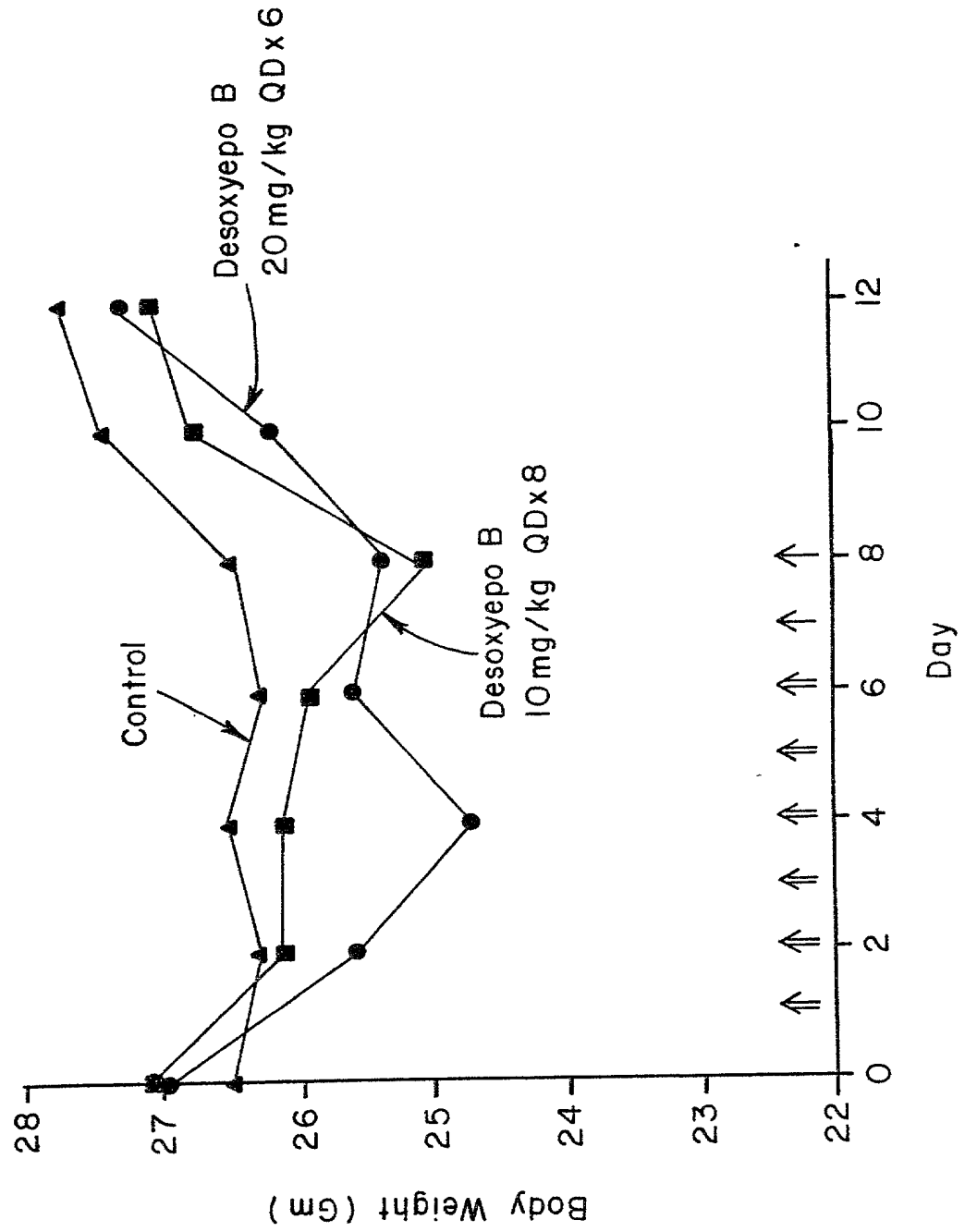
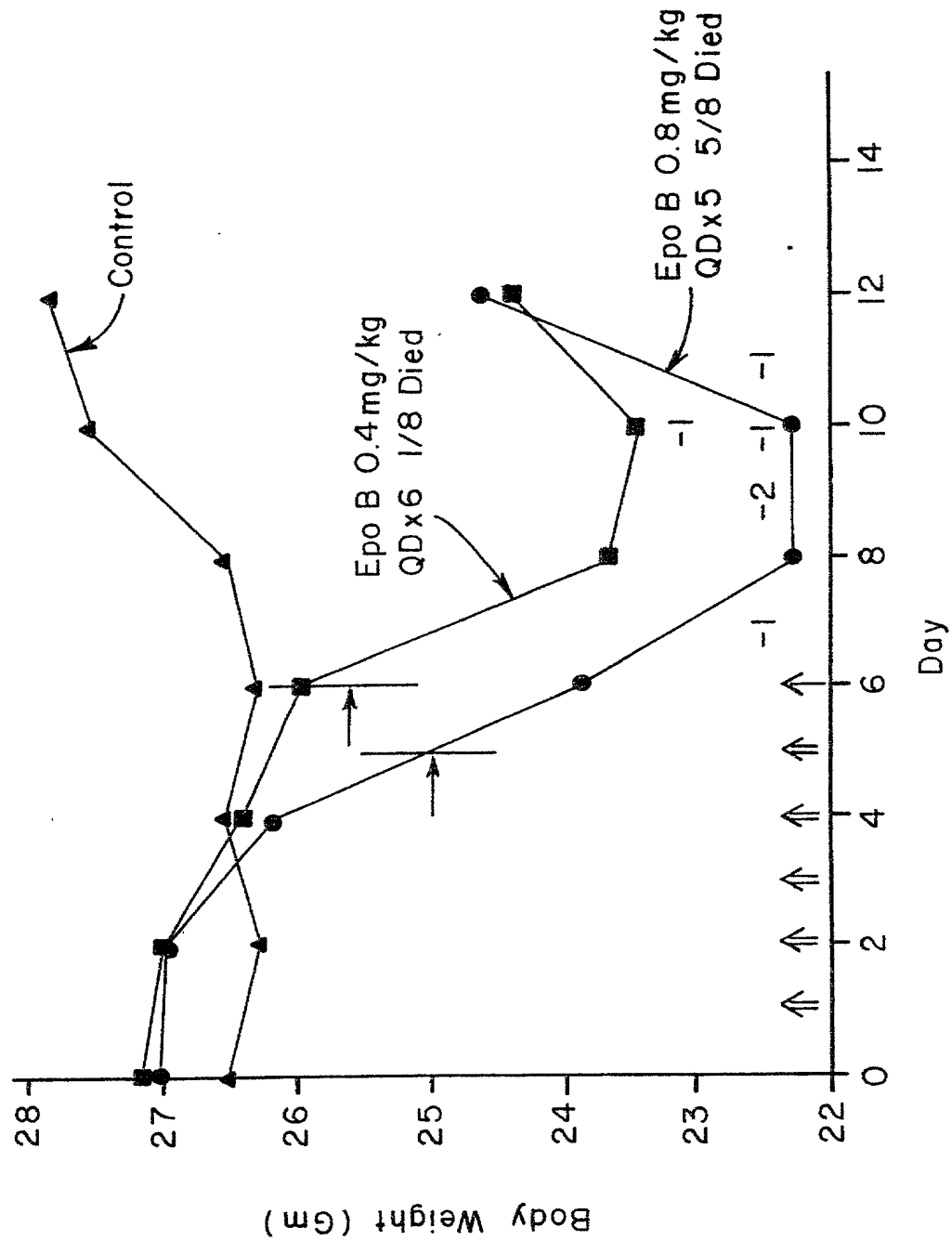
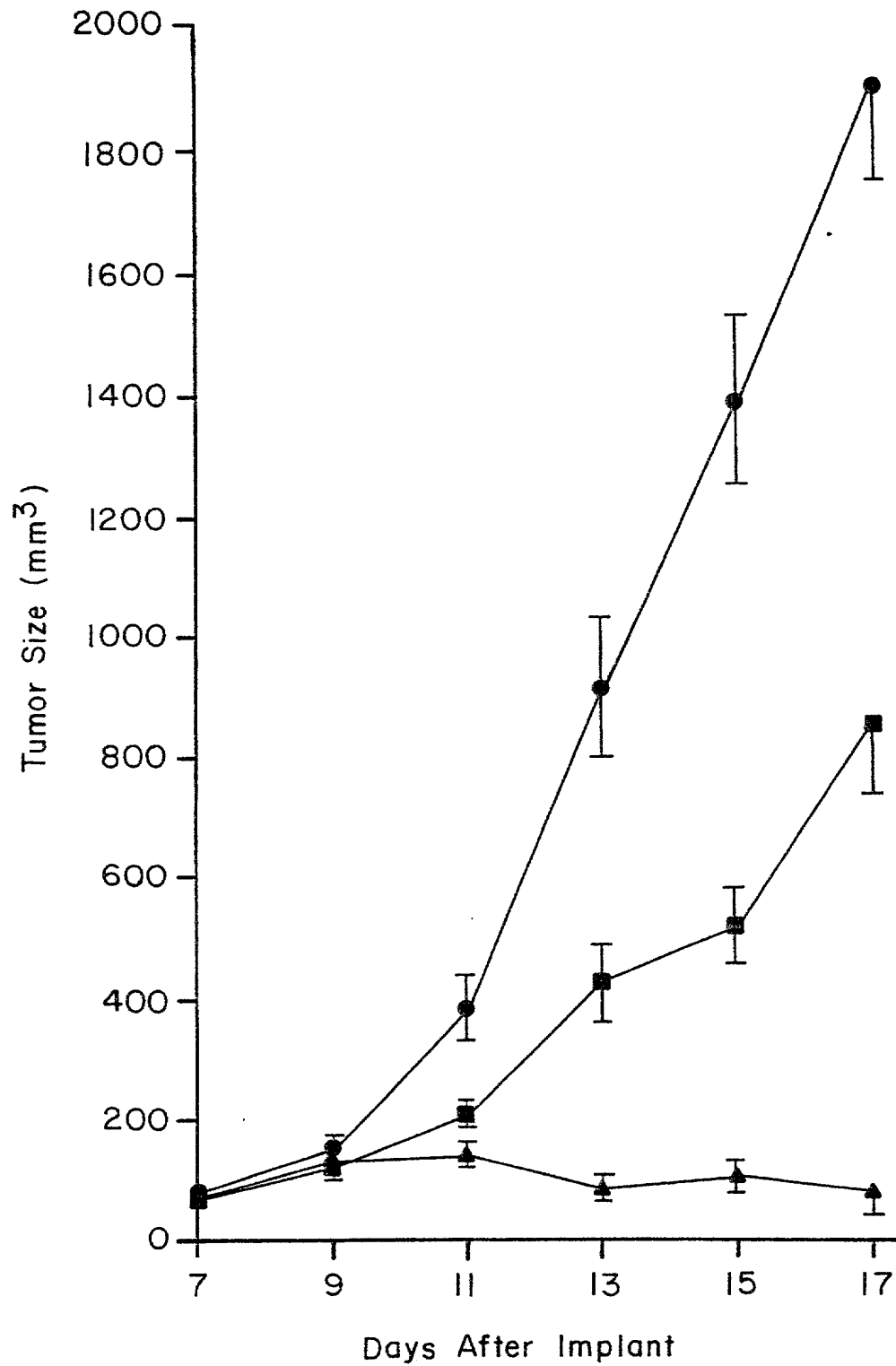


FIG. 44B



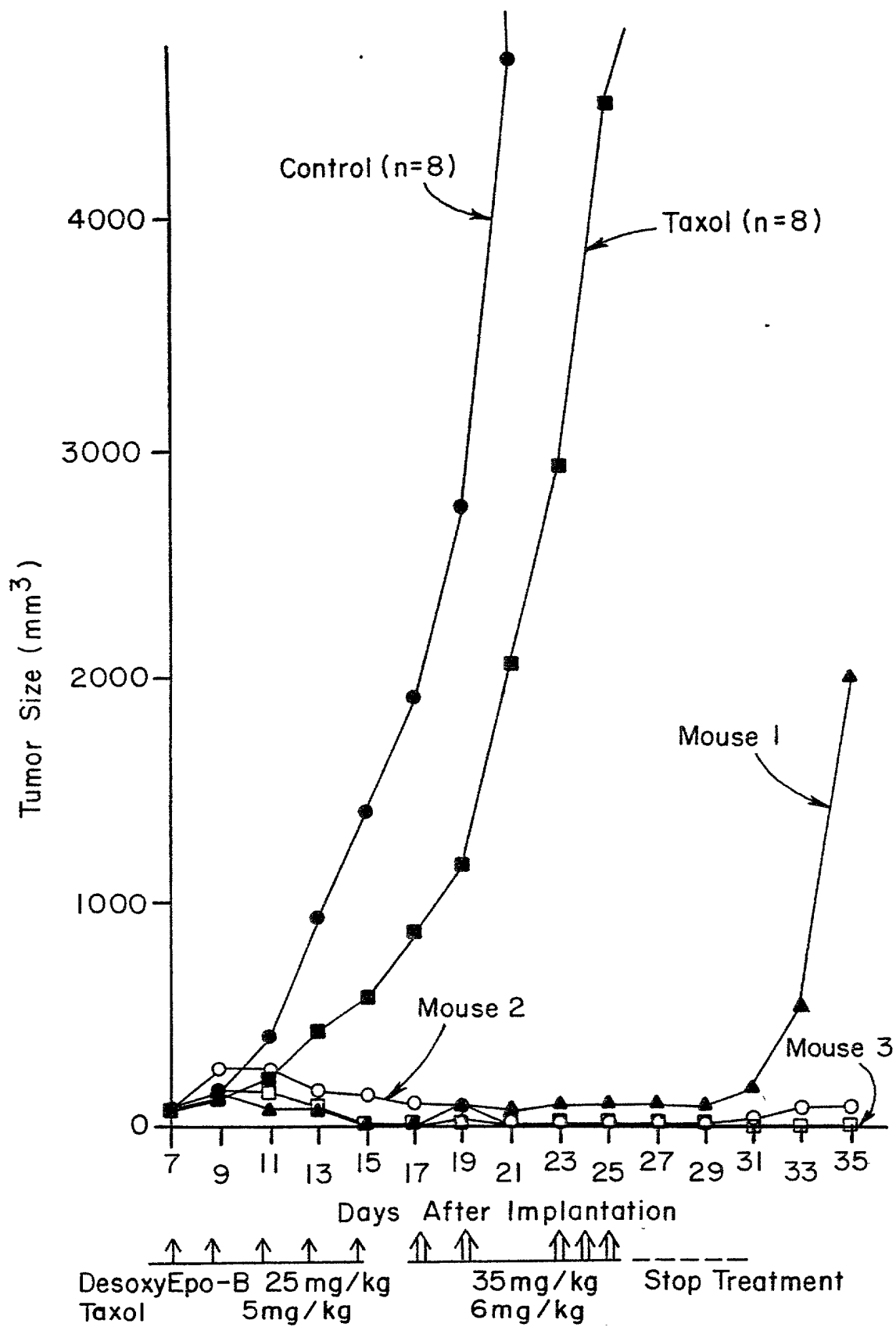
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FIG. 45A



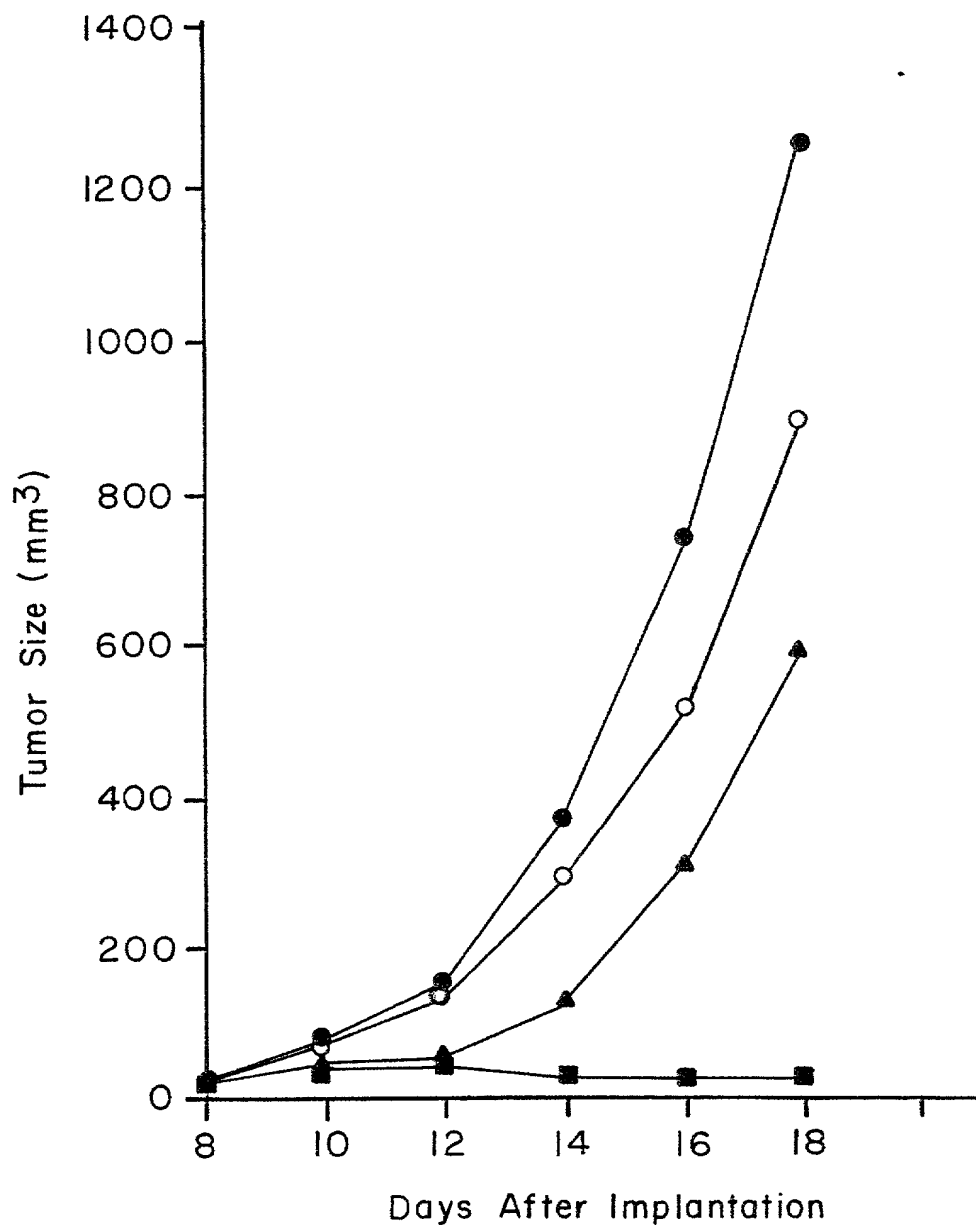
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FIG. 45 B



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FIG. 46



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FIG. 47

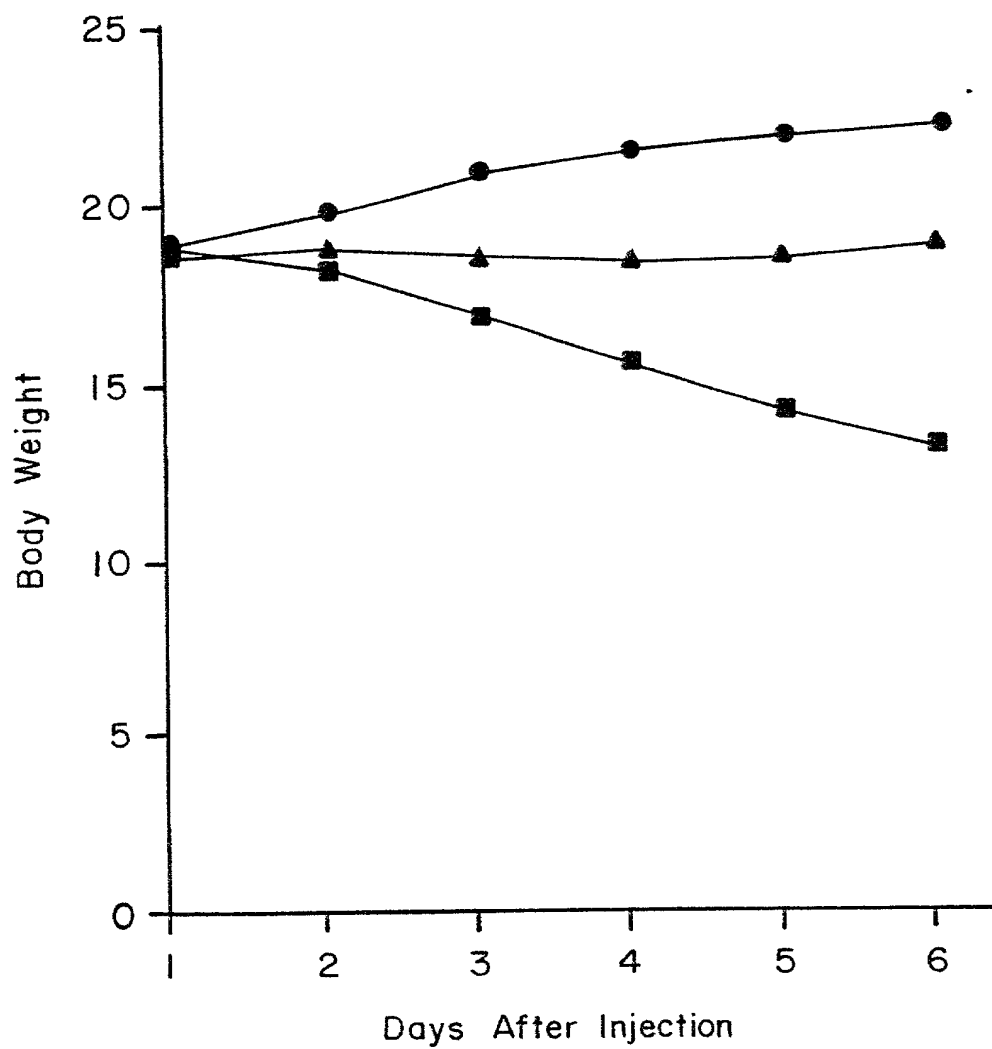


FIG. 48

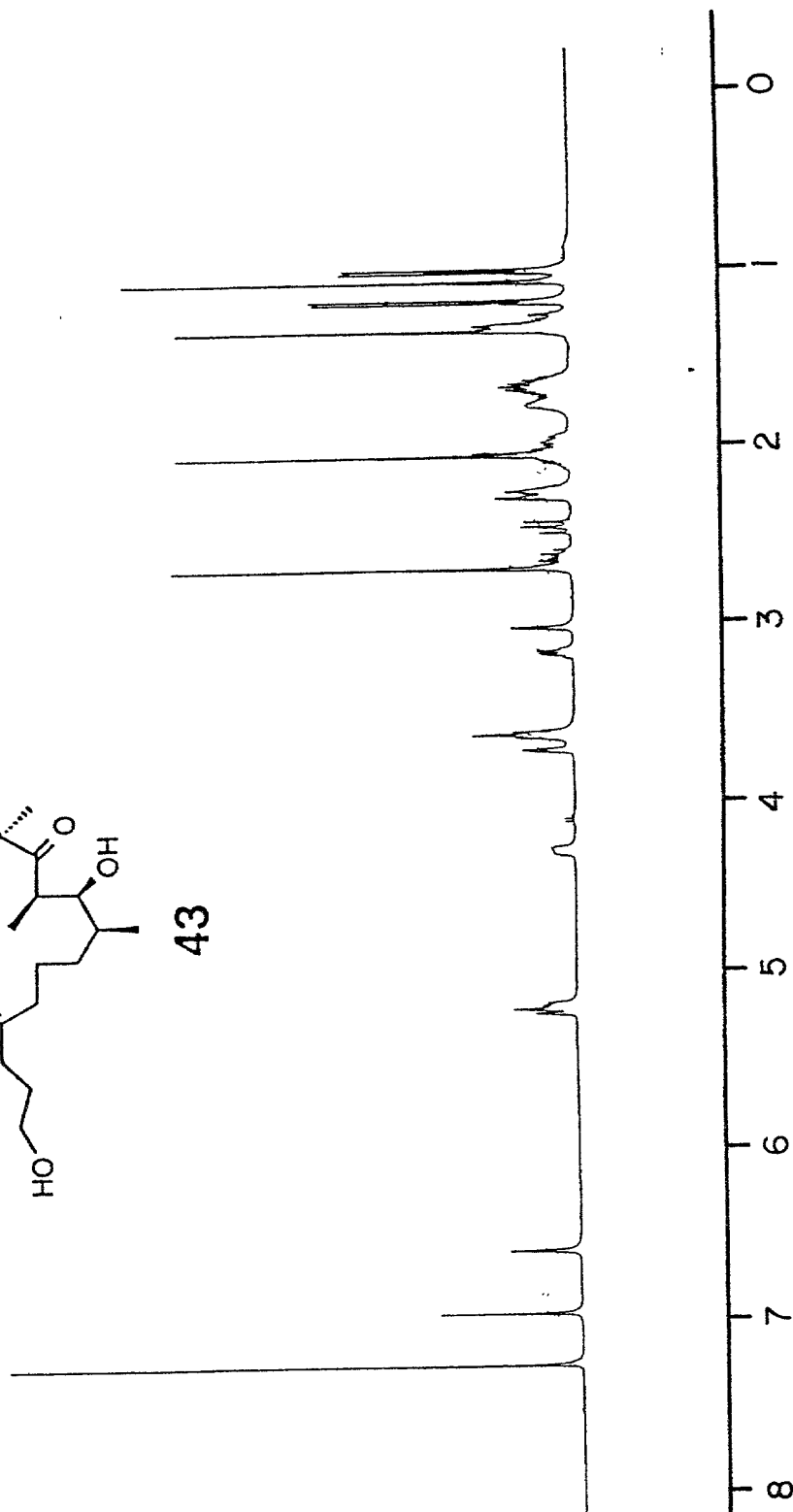
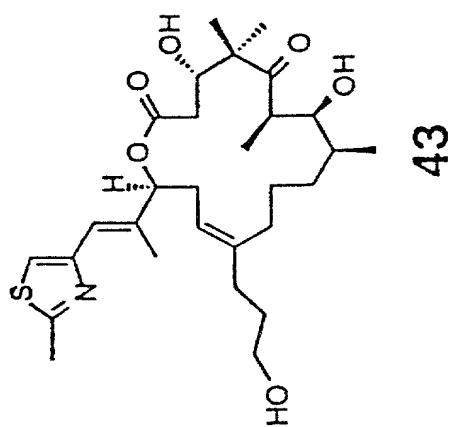
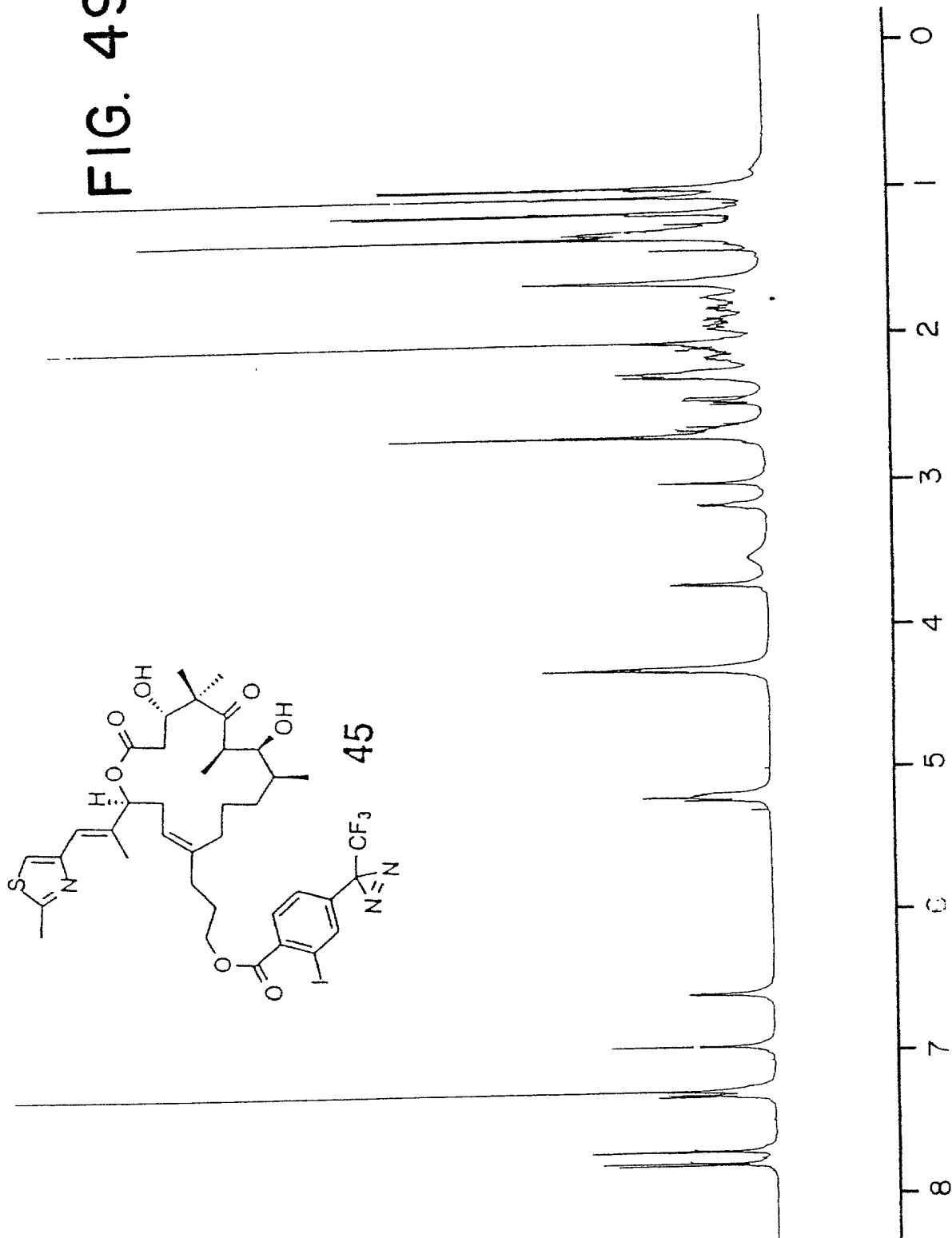
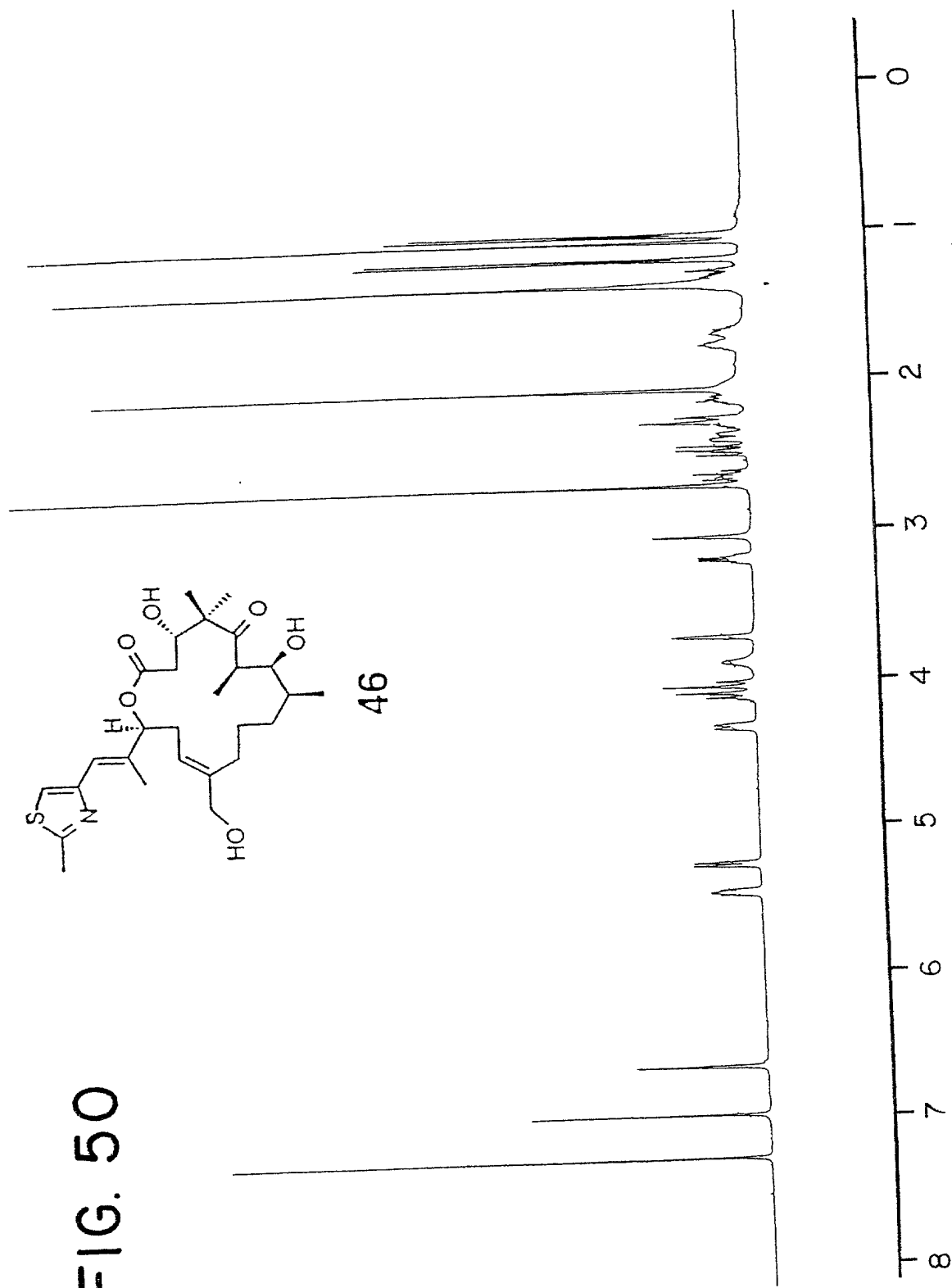


FIG. 49



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Cc1nc(C=C[C@H](C)OC(=O)/C=C/C2CC[C@@H](C)[C@H](O)C(=O)C[C@H](O)C2)cs1

47

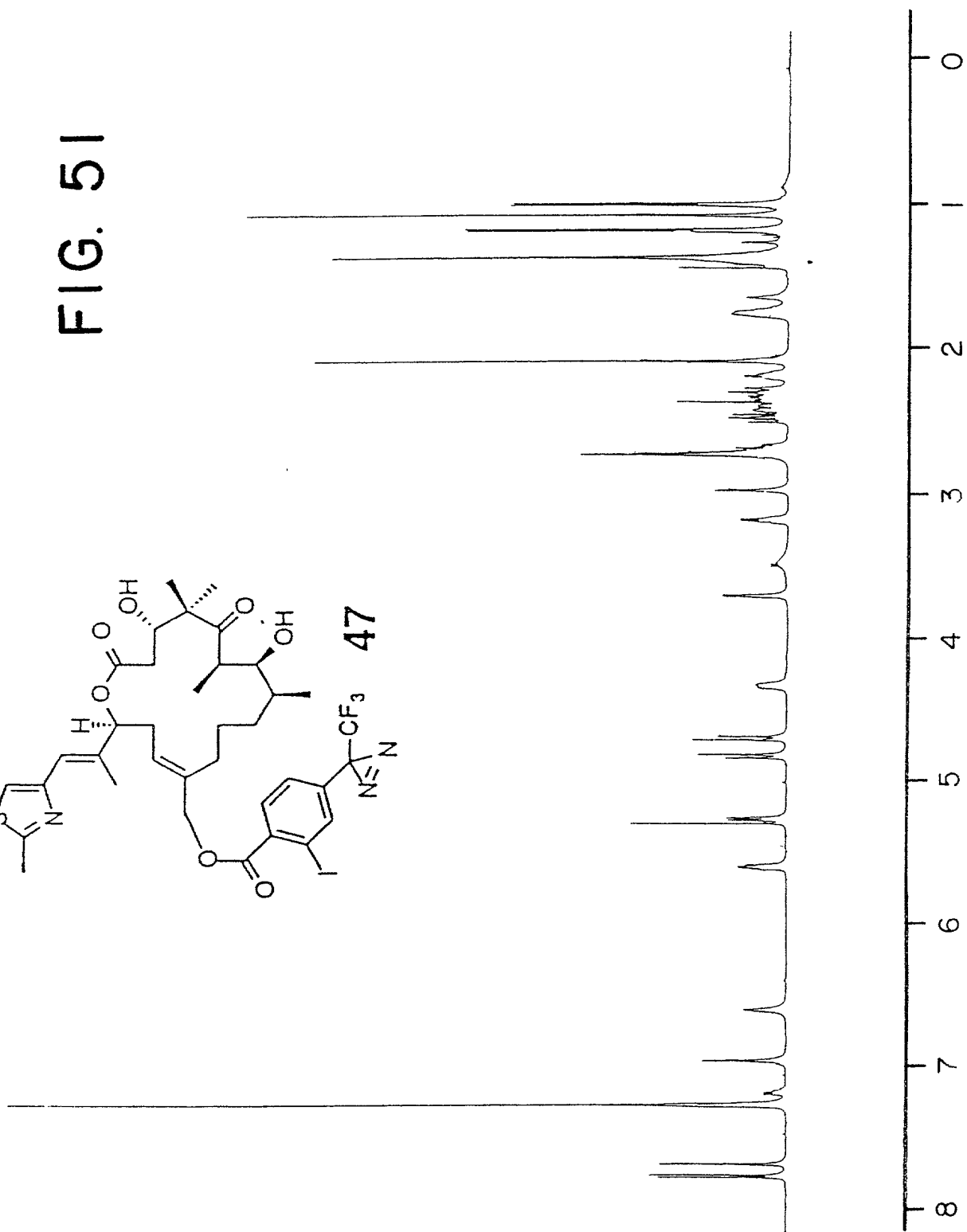


FIG. 52

